

NATIONAL IMPLEMENTATION OF THE REFORMULATED GASOLINE PROGRAM

HEARING BEFORE THE SUBCOMMITTEE ON HEALTH AND ENVIRONMENT OF THE COMMITTEE ON COMMERCE HOUSE OF REPRESENTATIVES ONE HUNDRED SIXTH CONGRESS SECOND SESSION

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(III)

NATIONAL IMPLEMENTATION OF THE REFORMULATED GASOLINE PROGRAM

THURSDAY, MARCH 2, 2000

HOUSE OF REPRESENTATIVES,
COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON HEALTH AND ENVIRONMENT,
Washington, DC.

The subcommittee met, pursuant to notice, at 11:13 a.m., in room 2123, Rayburn House Office Building, Hon. Michael Bilirakis (chairman) presiding.

Members present: Representatives Bilirakis, Upton, Greenwood, Bilbray, Ganske, Lazio, Shadegg, Bliley (ex officio), Waxman, Pallone, Stupak, Green, Strickland, and Barrett.

Also present: Representative Shimkus.

Staff present: Bob Meyers, majority counsel; Joe Stanko, majority counsel; Clay Alspach, legislative clerk; and Alison Taylor, minority counsel.

Mr. BILIRAKIS. The hearing will come to order by first thanking the members involved in requesting and organizing today's hearing. In a letter I received last fall, Messrs. Pallone, Barrett and Markey asked the subcommittee to explore issues with respect to the RFG Program nationally. I believe and trust that today's hearing responds to their concerns and will provide valuable information for this subcommittee's consideration.

The Chair will defer the remainder of his opening statement and recognize the chairman of the full committee, Mr. Bliley, for an opening statement at this time.

Chairman BLILEY. Thank you, Mr. Chairman, and thank you for having this hearing and also thank you for taking me out of order.

I want to also thank Messrs. Pallone, Barrett and Markey, my friends who requested this hearing in a letter last September and who have recommended various witnesses to be here today.

I additionally want to thank Mr. Greenwood and Mr. Lazio, also my good friends, who have supported this hearing and worked closely with the subcommittee on this matter.

As one of the few members of this committee who labored through the 1990 Clean Air Act amendments, I remember well the original intent of the Reformulated Gasoline Program. The reformulated gasoline, or RFG, was designed to address persistent air quality problems in major urban areas.

To date, the Environmental Protection Agency, EPA, and the Department of Energy, DOE, tell us that the RFG Program has worked. It has been EPA's and DOE's prevailing assessment that RFG has been able to achieve cleaner air at a relatively modest

cost. However, it is incumbent upon this committee to continually review the implementation of all Clean Air Act programs to judge both their health and environmental benefits as well as any associated costs or problems.

To this end, over the last 2 years, the Subcommittee on Health and Environment held two hearings on the RFG Program in California and successfully reported legislation introduced by Mr. Bilbray, H.R. 11, to waive the Federal oxygenate standard in California.

Today's hearing extends the subcommittee's focus to the implementation of the RFG Program outside California. In addition to the three mandatory RFG areas in California, there are seven mandatory RFG areas in the Northeast, MidAtlantic, Midwest, and Texas, plus additional areas that have voluntarily opted into the RFG Program. Concerns have been raised in these areas which are similar to concerns raised in California.

There are differences in the various areas that have implemented the RFG Program. The subcommittee needs to explore such differences. To be more specific, it is no small matter that the Clean Air Act treats California and the rest of the country differently with respect to the regulation of fuels and fuel additives. This difference dates back over 30 years and was reflected in the provisions of the 1970 Clean Air Act. This difference has also led to State-mandated fuels in California to an extent not found in other parts of the country.

It is also clear that different areas of the country have relied on different oxygenates in the RFG Program. While MTBE has captured the lion's share of the RFG market, ethanol predominates in Chicago and Midwestern areas. We need to hear from these areas. The fuel supply and distribution system also varies in different parts of the countries, as does the capability to produce different fuel formulations.

Finally, it is not a trivial matter to look at the environmental performance of various gasoline blends. The subcommittee mark-up of H.R. 11 revealed the initial difficulty in attempting to legislate any provision which seeks to do this.

In short, I believe the subcommittee has a lot of work to do. Today is a good start, and I look forward to receiving today's testimony. Again, Mr. Chairman, thank you very much.

Mr. BILIRAKIS. I thank the gentleman.

Mr. Waxman for an opening statement.

Mr. WAXMAN. Thank you very much, Mr. Chairman. I want to commend you for holding this hearing and also to thank Representatives Pallone, Barrett and Markey for requesting this broader perspective on the MTBE issue.

MTBE use results in serious groundwater impacts in California, and it is a growing risk in other parts of the Nation as well. My city of Santa Monica has faced the most serious MTBE contamination of any community in the country. Now, after the contamination, the city imports more than 80 percent of its drinking water from northern California and the Colorado River.

In short, MTBE leaking from underground storage tanks has shut down our drinking water well fields, making the drinking water taste and smell like turpentine.

We must be mindful that what happened in Santa Monica could happen elsewhere, and that is why I am pleased we are looking at this from a broader perspective.

This subcommittee has examined previously the Clean Air Act requirement that Federal reformulated gasoline contain oxygen that is amounting to 2 percent by weight. This provision was included in the Clean Air Act Amendments of 1990 after considerable debate as a way to increase the use of renewable fuels.

The oil companies chose to meet this requirement with MTBE, which is not only a nonrenewable but has characteristics that allow it to migrate through groundwater quickly and make it particularly difficult to clean up. The Blue Ribbon Panel on Oxygenates and Gasoline has confirmed that we do not need MTBE to achieve the air quality benefits of reformulated gasoline.

While the oxygenate requirement of the Clean Air Act has received the most attention in our consideration of the MTBE issue, simply removing this requirement at a national level won't solve our contamination problems.

The oil companies began to move toward increased use of MTBE long before there was any oxygenate requirement. For instance, in 1986, years before any Reformulated Gasoline Program was established, we had an MTBE production capacity of 4 billion pounds, and MTBE was used in unleaded gasoline as an octane enhancer at levels of 2 to 8 percent by volume.

I am interested to hear from our witnesses if the economics which moved the oil companies toward MTBE in the 1980's continue to exist. If so, removing the oxygenate requirement may be meaningless in a national context without ensuring caps on the levels of MTBE use.

For the rest of the country, lifting the oxygenate requirement could have little or no effect on the amount of MTBE actually used in gasoline. That is why I think it is important that we seriously consider the recommendations put forth in the Blue Ribbon Panel and by the Northeast States.

I also believe we must hold responsible parties accountable. The oil companies began to use MTBE early on, and they have responded in Santa Monica by paying millions of dollars to secure alternative water supplies. Now, however, the oil companies have been inconsistent in their commitment to see the cleanup through completion. This behavior throws the cleanup in doubt and potentially punishes the responsible parties who are willing to do their share.

I think this is going to be a useful hearing, Mr. Chairman. I, unfortunately, am not going to be able to stay for most of it. But I know that, at some point, you will have a unanimous consent that will allow us to submit written questions for the record.

Mr. BILIRAKIS. Without objection, that will be the case. And, additionally, the opening statements of all members of the subcommittee here will be made a part of the record.

Mr. WAXMAN. In that case, I ask my full statement be made a part of the record.

Mr. BILIRAKIS. Without objection.

[The prepared statement of Hon. Henry A. Waxman follows:]

PREPARED STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF CALIFORNIA

For the last several years, this subcommittee has been examining the urgent problem of groundwater contamination by the fuel additive methyl tertiary butyl ether or "MTBE." Until today we have largely focused on MTBE's enormous impact in California, even though MTBE is a growing concern throughout the nation.

Today's hearing will focus on the national implications of MTBE use and has been scheduled at the request of Representatives Pallone, Barrett, and Markey. I'd like to recognize these members for their leadership and I also want to commend the Chairman for agreeing to hold today's hearing.

MTBE use has resulted in serious groundwater impacts in California and is a growing risk in other parts of our nation. In my district, for example, the city of Santa Monica has faced the most serious MTBE contamination of any community in the country. Before MTBE contaminated Santa Monica's drinking water, groundwater provided 70% of the city's water supply. Now, after the contamination, the city imports more than 80% of its drinking water from Northern California and the Colorado River. In short, MTBE from leaking underground storage tanks has shut down our drinking water well fields, making the drinking water taste and smell like turpentine.

It is important to note that the contamination in Santa Monica did not occur due to some catastrophic event. The contamination occurred as a result of leaking underground storage tanks at gas stations. These storage tanks were no worse than storage tanks found throughout the nation in the districts of every Member of this Subcommittee. We must be mindful that what happened in Santa Monica could happen elsewhere, and that these tanks leak whether or not MTBE is in gasoline.

This Subcommittee has examined previously the Clean Air Act requirement that federal reformulated gasoline (rfg) contain oxygenates amounting to 2% by weight. This provision was included in the Clean Air Act Amendments of 1990, after considerable debate, as a way to increase the use of renewable fuels. The oil companies chose to meet this requirement with MTBE, which not only is non-renewable, but has characteristics that allow it to migrate to groundwater quickly and make it particularly difficult to clean up. The Blue Ribbon Panel on Oxygenates in Gasoline has confirmed that we do not need MTBE to achieve the air quality benefits of reformulated gasoline.

While the oxygenate requirement of the Clean Air Act has received the most attention in our consideration of the MTBE issue, simply removing this requirement at a national level won't solve our contamination problems.

The oil companies began to move towards increased use of MTBE long before there was any oxygenate requirement. For instance, in 1986—years before any reformulated gasoline program was established—we had a MTBE production capacity of 4 billion pounds and MTBE was used in unleaded gasoline as an octane enhancer at levels of 2-8% by volume. I am interested to hear from our witnesses if the economics which moved the oil companies toward MTBE in the 1980's continue to exist. If so, removing the oxygenate requirement may be meaningless in a national context without ensuring caps on the levels of MTBE use.

I'll give you a recent example of why I am concerned about this. The oxygenate requirement doesn't even apply in San Francisco, but it has recently been reported that MTBE is being used at levels twice that which would be required under the Clean Air Act.

In California, a combination of federal and state action should be able to address this problem. On March 25, 1999, Governor Davis announced that the State of California would phase out MTBE use in gasoline by December 31, 2002 under state law. The Governor's action in combination with federal relief from the oxygenate requirement and guarantees that there will be no backsliding in the air quality benefits of rfg should ensure that there is no further MTBE contamination while air quality benefits are maintained.

For the rest of the country lifting the oxygenate requirement could have little or no effect on the amount of MTBE actually used in gasoline. That's why I think it is important that we seriously consider the recommendations put forth by the Blue Ribbon Panel and by the northeast States.

I also believe that we must hold responsible parties accountable. The oil companies began to use MTBE long before there was any federal requirement to do so, and their leaking underground storage tanks are responsible for the actual contamination. In Santa Monica, the oil companies have paid millions of dollars to secure alternative water supplies. Now, however, the oil companies have been inconsistent in their commitment to see the cleanup through completion. This kind of irrespon-

sible behavior throws the cleanup in doubt and potentially punishes the responsible parties who are willing to do their share.

When the House Commerce Committee considered legislation to reauthorize Superfund on October 13, 1999, I offered an amendment that would have prevented oil companies from escaping responsibility for MTBE contamination. I am disappointed that this amendment was defeated, but I plan to offer it again when the legislation is considered on the House floor. We must ensure that EPA has as many tools as possible to ensure that remediation funding is obtained and that sites are fully cleaned up.

Again, I thank the Chairman for convening this hearing, I welcome today's witnesses and I look forward to hearing their testimony.

Mr. BILIRAKIS. Thank you, gentlemen.

The Chair will now continue with his opening statement.

During the subcommittee's review of legislation pertaining to the waiver of the Federal oxygenate standard in California, Messrs. Greenwood and Lazio were deeply involved in raising concerns regarding implementation of the RFG Program and the use of those oxygenates, particularly MTBE, in areas of the country outside California. They have continued their constructive dialog with the subcommittee.

Finally, I would note the early and hard work by Mr. Bilbray to advance legislation through this subcommittee and to tackle the many complex issues involved in the RFG Program. Mr. Bilbray has been a tireless advocate for increasing flexibility in the current program.

I am going to be blunt in my assessment of the Environmental Protection Agency's conduct with respect to the RFG Program and their effort responding to the concerns of this subcommittee. I don't think I have a reputation or image or background of being combative, and I am not very comfortable with my comments, but, at the same time, I think they have to be made.

In brief, I am appalled at the complete lack of candor and lack of response that the EPA has demonstrated despite repeated requests by this subcommittee to obtain information relevant to its legislative duties. The EPA has ignored written requests by the subcommittee, substantially delayed providing verbal briefings, and avoided, seemingly at all costs, giving direct and complete answers.

The testimony that EPA will present today, which was received for the first time last night at 7:45 p.m., basically rehashes some of the same general information provided to the subcommittee last May. In fact, several paragraphs are lifted from Mr. Perciasepe's May 6, 1999, statement, either verbatim or with minor changes.

As it did last May, EPA again ignored specific requests for information from the subcommittee in its letter of invitation, including defining differences and implementing—and I think this is just foundational—and implementing of the RFG Program in various areas of the country, describing how air quality benefits are accounted for in State implementation plans and explaining the extent of current statutory authority available to EPA to phaseout or curtail the use of any specific oxygenate. No wonder its testimony was delivered in the dark of night.

Second, EPA failed to comply with the document requests submitted to the agency 15 days ago with respect to its consideration of the California waiver request. EPA indicated it will only provide the documents several days after this hearing. Thus, EPA is denying members of this subcommittee the opportunity to conduct le-

gitimate oversight of its implementation of laws and this subcommittee's jurisdiction. To compound error, EPA did not indicate its intent to not produce the documents until less than 2 days ago.

Included in this document request was a request for information on EPA's widely reported effort to ban or curtail the use of MTBE through authorities contained in the Toxic Substances Control Act.

Third, despite assuring the subcommittee last May that EPA would not waste the subcommittee's time with respect to obtaining information on California's request for a waiver, EPA still refuses to give any firm date by which it will decide matters concerning this waiver.

Mr. Perciasepe's statement indicates only that we hope that "We hope to complete our assessment by early summer."

Administrator Perciasepe, this is difficult for me to say—you know me I think over the years—but given your past performance in providing information to this subcommittee, I guess I just don't have any faith that you will comply with this vague commitment.

The fact of the matter is the EPA has not devoted sufficient resources to the consideration of this waiver. For the first 5 months it had the waiver under consideration, EPA devoted only 80 combined staff hours to its consideration, basically one person working half a day per week. In the last 6 months, EPA has devoted more effort, but not much more. Over the last 6 months, the combined effort by all EPA personnel, as I understand it, to review all legal and technical matters concerning the waiver request amounts to an average of one person devoting less than half a normal workweek, 8½ hours to the effort.

Finally, I find it regrettable that, even at this late date, EPA cannot come clean with respect to what it has done or rather hasn't done and what it supports or doesn't support with respect to RFG. EPA today says it supports national legislation to address this matter. Yet it provides absolutely no detail on this very complicated matter.

EPA cites the work of the Blue Ribbon Panel and yet does not indicate what specific recommendations it supports or doesn't support.

The EPA mentions administrative activity but provided only an oral briefing after repeated requests and has not supplied one scrap of paper to the committee detailing its activity.

In short, EPA has given no indication that it actually wants to fix anything regarding the RFG Program within the conceivable future.

The first assessment of the California waiver request hopefully will be done this summer, they tell you, but it is subject to public comment period. Most informed sources believe any action under the Toxic Substances Control Act will take years. Administrative flexibility options under consideration are not available, apparently, to the public or to the Congress.

Last May, the administrator stated that, once the agency had the recommendations from the Blue Ribbon Panel, "it is important that we work with the States and coordinate with the Congress over the next 3 to 4 months."

The recommendations of the Blue Ribbon Panel were published last July. This fact, in addition to everything cited above, makes it

difficult for many of us to believe that EPA is at all sincere when Mr. Perciasepe states we are committed to working with the Congress. To me, this rings just like another nice-sounding throwaway line. And, of course, he will have the opportunity to prove me false in that regard.

The Chair now recognizes Mr. Pallone for an opening statement.

Mr. PALLONE. Thank you, Mr. Chairman. And I want to thank you and appreciate your following up on your commitment to myself and Representatives Barrett and Markey to hold the hearing today on the national reformulated gasoline, RFG, issue. And I also thank Chairman Bliley, who also agreed to hold the hearing.

I also appreciate your having invited Berry Grossman from Oxybusters, which is headquartered in New Jersey, and Jason Grumet from NSCAUM, which represents New Jersey, among other States. I look forward to hearing from all of our witnesses; and, of course, I am particularly pleased to see my colleague, Mr. Franks from New Jersey.

What I want to hear, of course, is the analysis of the Nation's Reformulated Gasoline Program and related issues, including the national security implications, ethanol issues, California's waiver status, and environmental protection and human health impacts.

Ultimately, I believe we need to pass national legislation. Several Members in both Houses of Congress have introduced bills to address MTBE as recently as Tuesday of this week. I see my other friend from New York, Mr. Forbes, introduced a bill that also would help municipalities fund MTBE cleanups, which I think is very important. So, clearly, this is an issue receiving a lot of bipartisan attention across the Nation, both in the House and in the other body.

Last May, I introduced a comprehensive national bill in the House that addresses the reformulated gasoline issue, that is H.R. 1705. My bill contains many of the provisions that are highlighted in the Blue Ribbon Panel report and in the principles presented by an unusual coalition which is represented by NSCAUM, the American Lung Association and the American Petroleum Institute. I look forward to working with members on both side of the aisle, with these groups, most of whom are represented here today, to pass national legislation in the near future.

I believe strongly that we have identified a problem, that we should address it as quickly as possible. Even though we may not have all the science, if we wait the problem will only become worse. We have identified some reasonable and practical courses of action that can be taken now.

As I have said and as my bill illustrates, I believe we ultimately must address this program comprehensively. Just banning or reducing the use of MTBE without waiving the oxygenate requirement would create undue burdens on certain regions and would address only one aspect of the overall problem and issue before us. Waiving the oxygenate requirement provides flexibility to use other oxygenate or eliminate oxygenate where environmentally sound, to do so without reeking havoc on the ethanol industry and our economy's national security. I believe many of our witnesses will underscore these facts.

Mr. Chairman, many groups have stated any changes we make must not result in compromises or losses in air quality protection benefits that have been achieved. H.R. 1705 contains language to ensure air quality protection at current levels.

EPA's Blue Ribbon Panel recommends that the current Clean Air Act requirement to require 2 percent oxygen by weight in RFG must be removed in order to provide flexibility to blend adequate fuel supplies in a cost-effective manner while quickly reducing usage of MTBE and maintaining air quality benefits. So the panel's recommendations echo the provisions in H.R. 1705 quite closely.

The panel also recommends various studies, and H.R. 1705 asks the NAS to study the effects of all oxygenates and their by-products.

The Northeast States for Coordinated Air Use Management, NSCAUM, who we will hear from shortly, has repeatedly emphasized the importance of congressional action to lift the 2 percent oxygen standard for the whole country, because the one-size-fits-all does not work. Tosco, which has testified before this subcommittee, has informed me that the oxygenate requirement and a phase-down of the MTBE must be addressed simultaneously.

So, Mr. Chairman, I urge my colleagues to work together to be proactive and pass bipartisan legislation soon. I will continue to push to see that this happens, and I hope our witnesses will shed some light as to the best way to accomplish this goal to the Nation as a whole.

Thank you again for holding the hearing today, Mr. Chairman.

Mr. BILIRAKIS. I thank the gentleman.

Dr. Ganske.

Mr. GANSKE. Thank you, Mr. Chairman. I am happy you have scheduled this hearing today. With 60 Minutes doing an episode on MTBE water contamination, national newspapers giving attention to MTBE contamination, several Members of Congress are taking very vocal positions on this issue, and I am looking forward to their testimony.

Mr. Chairman, reformulated gasoline does not contaminate water. Reformulated gasoline cleans the air. MTBE contaminates water. If you want clean air, use oxygenated gasoline. If you want clean water, ban MTBE. We don't have to choose between clean air and clean water. If we switch from MTBE to ethanol, we can have both.

I know I sound like a broken record to many of you, so now I want to show you how bad MTBE is. You each have before you two vials, one filled with MTBE, the other with ethanol. Go ahead and smell each vial, if you can. MTBE smells worse than paint thinner. It takes only a teaspoon of MTBE to make an olympic-size swimming pool smell and taste like paint thinner, and this contains several teaspoons.

Last month, the Iowa Department of National Resources issued a report that showed 32 percent of Iowa groundwater samples had MTBE levels of at least 15 micrograms per liter. What is worse is 29 percent of Iowa's groundwater samples had MTBE concentration levels above the level at which EPA issues a drinking water advisory. Think about this. There is no MTBE sold and used in Iowa

today. Yet, 29 percent of the groundwater samples qualify for a Federal drinking water advisory due to MTBE contamination.

How is that? Well, probably because much MTBE comes out of the tail pipes of cars just driving through Iowa. That shows how contaminating this stuff really is. Think about the sample of MTBE in front of you and its ability to contaminate several olympic-size swimming pools. We need to address the issue now.

The RFG Program works. Whether one uses MTBE or ethanol as an oxygenate, the emissions reductions are the same. But, with ethanol, there is no groundwater contamination, not a single reported incident.

So, Mr. Chairman, I want to address some of the myths about ethanol and clear them up.

Myth: Ethanol is a dirty fuel that harms the environment. Fact: Ethanol is a clean, biodegradable fuel that achieves emissions reductions equal to other oxygenates.

Myth: Ethanol is not energy efficient to produce. Fact: Study shows show that one gallon of ethanol generally provides 25 to 40 percent more energy than is required to grow corn and process it into ethanol.

Myth: Ethanol cannot satisfy the oxygen demand of the RFG Program itself. Fact: To replace MTBE, the ethanol industry must produce slightly more than 3 billion gallons each year. Recently, several new facilities have come on board, so that pushes our capacity today beyond 2 billion gallons.

Myth: Ethanol is difficult and expensive to transport from the Midwest to the coast. Fact: The Department of Agriculture report says, given a period of 3 to 5 years, there appears to be no transportation impediment to the use of ethanol as a substitute for MTBE. I must say, Mr. Chairman, I find it hard to believe that transporting MTBE from Saudi Arabia is any more cost effective or difficult than transporting ethanol from Iowa.

Myth: Ethanol will ruin modern vehicle engines. Fact: Studies have shown that the use of ethanol does not result in any mechanical problems.

Myth: Blending ethanol is not practical from a refiner's viewpoint. Fact: Mobile Corporation published a brochure in which it says ethanol is safe to use in any type of engines and keeps fuel injectors clean. Mobile also said using ethanol blended fuel is one of the easiest ways you can help reduce air pollution and dependence on foreign oil.

This issue is very important, Mr. Chairman. Thank you for holding this hearing.

There is an alternative to this stuff, MTBE. It is ethanol, and I think that we ought to use it.

Mr. BILIRAKIS. I am not surprised that is your position.

Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman.

Before I get started, if Dr. Ganske can provide us a six-pack of this ethanol down at this end of the table, we would appreciate it.

Mr. GANSKE. At the end of this hearing, you may need it.

Mr. GREEN. I don't know. I don't know. Before the hearing, we might need more than a six-pack.

I appreciate, Mr. Chairman, you calling this hearing. And since my colleagues Joe Barton and Ralph Hall are not here, March 2 is Texas Independence Day. And, in Texas, we are celebrating it because Texas won independence against overwhelming odds against the Republic of Mexico in 1836. I appreciate commemorating that, Mr. Chairman, today. Hopefully, any similarities between that and this hearing are not the case.

I appreciate the opportunity to hear the witnesses today and engage in what I hope will be a productive exchange on the Reformulated Gasoline Program. Looking at the witness list, I can see we are going to have a lively debate, and our panelists and members are not going to agree on too many things this morning.

First of all, there is nothing that makes my car or truck run that I want to drink, whether it smells good or not. Yet I think there is still one thing we can all agree on, that the RFG Program has resulted in tremendous gains in our air quality and the health of millions of Americans. In fact, following the implementation of phase one of the RFG Program in 1995, the EPA reported a benzene reduction of 40 percent and an overall air toxins reduction of 30 percent, twice the minimum requirement. EPA has attributed over two-thirds of this overcompliance to the use of oxygenates in reformulated gasoline.

California's Air Resources Board reported similar findings for the State's cleaner burning gasoline and concluded that the annual reductions in cancer incidence due to toxic air remissions are between 40 and 50 percent. Let me repeat that the incidence of new cancer was reduced by 40 to 50 percent.

While this outcome is enhanced by the more stringent gasoline formula used in California, 95 percent of the State's gasoline contained MTBE in 1998.

Furthermore, the California Air Resources Board predicted the RFG Program from 1995 to 2000 reduced the risk of developing cancer from exposure to benzene and other toxic emissions by 20 to 30 percent. The use of Federal RFG after 2000 will reduce the risk of developing cancer from exposure to benzene and other air toxins by 30 to 40 percent.

Some have suggested that these tremendous gains in air quality should be abandoned because MTBE has been found in drinking water. Members of the subcommittee and others testifying today have plans to dramatically alter the RFG Program. If we are going to make the change in the RFG Program, we must maintain current air quality standards. Anything else shouldn't be acceptable.

If we are going to make a change in the RFG Program, it must be cost effective. Our witness today from the Department of Energy will testify that eliminating MTBE will cost the refining industry between \$2 billion and \$3 billion. This witness states that the production cost would increase by a minimum of 3 or 4 cents per gallon.

And I have a copy of an article in today's Houston Chronicle that talks about—and this is in Houston where our gas prices typically are lower—that a gas price of \$2 a gallon may not be too far down the road.

This witness will go on to say, and I quote, phasing MTBE out of the gasoline is equivalent to the impact to gasoline supplies of

losing, over whatever the phase-out period, some 400,000 barrels a day of gasoline production capacity or closing four or five large refineries. A phase-out that ultimately leads to the ban on MTBE may also affect the ability of the U.S. gasoline market to draw gasoline supplies from Europe, the major source of our price-sensitive gasoline imports, since these refiners count on the use of MTBE to some degree as well.

At a time when all consumers, particularly those in the Northeast, are suffering from the increase in gasoline costs, we must be cautious in implementing policies that might increase this price of gas even more than currently. Some are suggesting that the increase in cost to consumers could be high. For example, when California discussed phasing out MTBE, studies were done to determine how the phase-out would impact price and supply. The California Energy Commission study estimated the cost of phasing out MTBE is between 5 and 7 cents a gallon.

If we are going to make a change in our RFG Program, we must not ignore the problem of leaking fuel tanks. It would also be beneficial if our witnesses could share their thoughts on the fact that gasoline contains some very dangerous carcinogens, although MTBE is not one of them, even considering what 60 Minutes said. Where MTBE is found, these are also found. So even if you limit MTBE, if you don't eliminate your leaky storage tanks, you will still have parts of that gasoline without MTBE in your water, including the carcinogens that they carry with them.

As we think how to proceed, I urge my colleagues to approach this with caution and with thorough and thoughtful debate. In our rush to address the concerns about MTBE, we hopefully will not create a bigger problem. The EPA's Blue Ribbon Task Force and its recently issued report highlights the needs to act with due diligence.

Mr. BILIRAKIS. Please summarize.

Mr. GREEN. Mr. Chairman, I will be glad to submit what I have from the Blue Ribbon Task Force into the record because I have some questions based on that today.

[The information referred to follows:]

The Blue Ribbon Panel on Oxygenates in Gasoline

Executive Summary and Recommendations

Final, July 27, 1999

Introduction

The Federal Reformulated Gasoline Program (RFG) established in the Clean Air Act Amendments of 1990, and implemented in 1995, has provided substantial reductions in the emissions of a number of air pollutants from motor vehicles, most notably volatile organic compounds (precursors of ozone), carbon monoxide, and mobile-source air toxics (benzene, 1,3-butadiene, and others), in most cases resulting in emissions reductions that exceed those required by law. To address its unique air pollution challenges, California has adopted similar but more stringent requirements for California RFG.

The Clean Air Act requires that RFG contain 2% oxygen, by weight. Over 85% of RFG contains the oxygenate methyl tertiary butyl ether (MTBE) and approximately 8% contains ethanol - a domestic fuel-blending stock made from grain and potentially from recycled biomass waste. There is disagreement about the precise role of oxygenates in attaining the RFG air quality benefits although there is evidence from the existing program that increased use of oxygenates results in reduced carbon monoxide emissions, and it appears that additives contribute to reductions in aromatics in fuels and related air benefits. It is possible to formulate gasoline without oxygenates that can attain similar air toxics reductions, but less certain that, given current federal RFG requirements, all fuel blends created without oxygenates could maintain the benefits provided today by oxygenated RFG.

At the same time, the use of MTBE in the program has resulted in growing detections of MTBE in drinking water, with between 5% and 10% of drinking water supplies in high oxygenate use areas¹ showing at least detectable amounts of MTBE. The great majority of these detections to date have been well below levels of public health concern, with approximately one percent rising to levels above 20 ppb. Detections at lower levels have, however, raised consumer taste and odor concerns that have caused water suppliers to stop using some water supplies and to

¹ Areas using RFG (2% by weight oxygen) and/or Oxyfuel (2.7% by weight Oxygen)

incur costs of treatment and remediation. The contaminated wells include private wells that are less well protected than public drinking water supplies and not monitored for chemical contamination. There is also evidence of contamination of surface waters, particularly during summer boating seasons.

The major source of groundwater contamination appears to be releases from underground gasoline storage systems (UST). These systems have been upgraded over the last decade, likely resulting in reduced risk of leaks. However, approximately 20% of the storage systems have not yet been upgraded, and there continue to be reports of releases from some upgraded systems, due to inadequate design, installation, maintenance, and/or operation. In addition, many fuel storage systems (e.g. farms, small above-ground tanks) are not currently regulated by U.S. EPA. Beyond groundwater contamination from UST sources, the other major sources of water contamination appear to be small and large gasoline spills to ground and surface waters, and recreational water craft - particularly those with older motors - releasing unburned fuel to surface waters.

The Blue Ribbon Panel

In November, 1998, U.S. EPA Administrator Carol M. Browner appointed a Blue Ribbon Panel to investigate the air quality benefits and water quality concerns associated with oxygenates in gasoline, and to provide independent advice and recommendations on ways to maintain air quality while protecting water quality. The Panel, which met six times from January - June, 1999, heard presentations in Washington, the Northeast, and California about the benefits and concerns related to RFG and the oxygenates; gathered the best available information on the program and its effects; identified key data gaps; and evaluated a series of alternative recommendations based on their effects on:

- air quality
- water quality
- stability of fuel supply and cost

The Findings and Recommendations of the Blue Ribbon Panel

Findings Based on its review of the issues, the Panel made the following overall findings:

- The distribution, use, and combustion of gasoline poses risks to our environment and public health.
- RFG provides considerable air quality improvements and benefits for millions of US citizens.
- The use of MTBE has raised the issue of the effects of both MTBE alone and MTBE in gasoline. This panel was not constituted to perform an independent comprehensive health assessment and has chosen to rely on recent reports by a

number of state, national, and international health agencies. What seems clear, however, is that MTBE, due to its persistence and mobility in water, is more likely to contaminate ground and surface water than the other components of gasoline.

- MTBE has been found in a number of water supplies nationwide, primarily causing consumer odor and taste concerns that have led water suppliers to reduce use of those supplies. Incidents of MTBE in drinking water supplies at levels well above EPA and state guidelines and standards have occurred, but are rare. The Panel believes that the occurrence of MTBE in drinking water supplies can and should be substantially reduced.
- MTBE is currently an integral component of the U.S. gasoline supply both in terms of volume and octane. As such, changes in its use, with the attendant capital construction and infrastructure modifications, must be implemented with sufficient time, certainty, and flexibility to maintain the stability of both the complex U. S. fuel supply system and gasoline prices.

The following recommendations are intended to be implemented as *a single package* of actions designed to simultaneously maintain air quality benefits while enhancing water quality protection and assuring a stable fuel supply at reasonable cost. The majority of these recommendations could be implemented by federal and state environmental agencies without further legislative action, and we would urge their rapid implementation. We would, as well, urge all parties to work with Congress to implement those of our recommendations that require legislative action.

Recommendations to Enhance Water Protection

Based on its review of the existing federal, state and local programs to protect, treat, and remediate water supplies, the Blue Ribbon Panel makes the following recommendations to enhance, accelerate, and expand existing programs to improve protection of drinking water supplies from contamination.

Prevention

1. EPA, working with the states, should take the following actions to enhance significantly the Federal and State Underground Storage Tank programs:
 - a. Accelerate enforcement of the replacement of existing tank systems to conform with the federally-required December 22, 1998 deadline for upgrade, including, at a minimum, moving to have all states prohibit fuel deliveries to non-upgraded tanks, and adding enforcement and compliance resources to ensure prompt enforcement action, especially in areas using RFG and Wintertime Oxyfuel.

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- b. Evaluate the field performance of current system design requirements and technology and, based on that evaluation, improve system requirements to minimize leaks/releases, particularly in vulnerable areas (see recommendations on Wellhead Protection Program in 2. below)
 - c. Strengthen release detection requirements to enhance early detection, particularly in vulnerable areas, and to ensure rapid repair and remediation
 - d. Require monitoring and reporting of MTBE and other ethers in groundwater at all UST release sites
 - e. Encourage states to require that the proximity to drinking water supplies, and the potential to impact those supplies, be considered in land-use planning and permitting decisions for siting of new UST facilities and petroleum pipelines.
 - f. Implement and/or expand programs to train and license UST system installers and maintenance personnel.
 - g. Work with Congress to examine and, if needed, expand the universe of regulated tanks to include underground and aboveground fuel storage systems that are not currently regulated yet pose substantial risk to drinking water supplies.
2. EPA should work with its state and local water supply partners to enhance implementation of the Federal and State Safe Drinking Water Act programs to:
- a. Accelerate, particularly in those areas where RFG or Oxygenated Fuel is used, the assessments of drinking water source protection areas required in Section 1453 of the 1996 Safe Drinking Water Act Amendments.
 - b. Coordinate the Source Water Assessment program in each state with federal and state Underground Storage Tank Programs using geographic information and other advanced data systems to determine the location of drinking water sources and to identify UST sites within source protection zones.
 - c. Accelerate currently-planned implementation of testing for and reporting of MTBE in public drinking water supplies to occur before 2001.
 - d. Increase ongoing federal, state, and local efforts in Wellhead Protection Areas including:
 - enhanced permitting, design, and system installation requirements for USTs and pipelines in these areas;
 - strengthened efforts to ensure that non-operating USTs are properly closed;
 - enhanced UST release prevention and detection
 - improved inventory management of fuels.
3. EPA should work with states and localities to enhance their efforts to protect lakes and reservoirs that serve as drinking water supplies by restricting use of

recreational water craft, particularly those with older motors.

4. EPA should work with other federal agencies, the states, and private sector partners to implement expanded programs to protect private well users, including, but not limited to:
 - a. A nationwide assessment of the incidence of contamination of private wells by components of gasoline as well as by other common contaminants in shallow groundwater;
 - b. Broad-based outreach and public education programs for owners and users of private wells on preventing, detecting, and treating contamination;
 - c. Programs to encourage and facilitate regular water quality testing of private wells.
5. Implement, through public-private partnerships, expanded Public Education programs at the federal, state, and local levels on the proper handling and disposal of gasoline.
6. Develop and implement an integrated field research program into the groundwater behavior of gasoline and oxygenates, including:
 - a. Identifying and initiating research at a population of UST release sites and nearby drinking water supplies including sites with MTBE, sites with ethanol, and sites using no oxygenate;
 - b. Conducting broader, comparative studies of levels of MTBE, ethanol, benzene, and other gasoline compounds in drinking water supplies in areas using primarily MTBE, areas using primarily ethanol, and areas using no or lower levels of oxygenate.

Treatment and Remediation

7. EPA should work with Congress to expand resources available for the up-front funding of the treatment of drinking water supplies contaminated with MTBE and other gasoline components to ensure that affected supplies can be rapidly treated and returned to service, or that an alternative water supply can be provided. This could take a number of forms, including but not limited to:
 - a. Enhancing the existing Federal Leaking Underground Storage Tank Trust Fund by fully appropriating the annual available amount in the Fund, ensuring that treatment of contaminated drinking water supplies can be funded, and streamlining the procedures for obtaining funding.
 - b. Establishing another form of funding mechanism which ties the funding more directly to the source of contamination.
 - c. Encouraging states to consider targeting State Revolving Funds (SRF) to help accelerate treatment and remediation in high priority areas.

8. Given the different behavior of MTBE in groundwater when compared to other components of gasoline, states in RFG and Oxyfuel areas should reexamine and enhance state and federal "triage" procedures for prioritizing remediation efforts at UST sites based on their proximity to drinking water supplies.
9. Accelerate laboratory and field research, and pilot projects, for the development and implementation of cost-effective water supply treatment and remediation technology, and harmonize these efforts with other public/private efforts underway.

Recommendations for Blending Fuel for Clean Air and Water

Based on its review of the current water protection programs, and the likely progress that can be made in tightening and strengthening those programs by implementing Recommendations 1 - 9 above, the Panel agreed broadly, although not unanimously, that even enhanced protection programs will not give adequate assurance that water supplies will be protected, and that changes need to be made to the RFG program to reduce the amount of MTBE being used, while ensuring that the air quality benefits of RFG, and fuel supply and price stability, are maintained.

Given the complexity of the national fuel system, the advantages and disadvantages of each of the fuel blending options the Panel considered (see Appendix A), and the need to maintain the air quality benefits of the current program, the Panel recommends an *integrated package* of actions by both Congress and EPA that should be *implemented as quickly as possible*. The key elements of that package, described in more detail below, are:

- Action agreed to broadly by the Panel to reduce the use of MTBE substantially (with some members supporting its complete phase out), and action by Congress to clarify federal and state authority to regulate and/or eliminate the use of gasoline additives that threaten drinking water supplies;
- Action by Congress to remove the current 2% oxygen requirement to ensure that adequate fuel supplies can be blended in a cost-effective manner while quickly reducing usage of MTBE; and
- Action by EPA to ensure that there is no loss of current air quality benefits.

The Oxygen Requirement

10. The current Clean Air Act requirement to require 2% oxygen, by weight, in RFG must be removed in order to provide flexibility to blend adequate fuel supplies in a cost-effective manner while quickly reducing usage of MTBE and maintaining air quality benefits.

The panel recognizes that Congress, when adopting the oxygen requirement, sought to advance several national policy goals (energy security and diversity, agricultural policy, etc) that are beyond the scope of our expertise and deliberations.

The panel further recognizes that if Congress acts on the recommendation to remove the requirement, Congress will likely seek other legislative mechanisms to fulfill these other national policy interests.

Maintaining Air Benefits

11. Present toxic emission performance of RFG can be attributed, to some degree, to a combination of three primary factors: 1) mass emission performance requirements, 2) the use of oxygenates, and 3) a necessary compliance margin with a per gallon standard. In Cal RFG, caps on specific components of fuel is an additional factor to which toxics emission reductions can be attributed.

Outside of California, lifting the oxygen requirement as recommended above may lead to fuel reformulations that achieve the minimum performance standards required under the 1990 Act, rather than the larger air quality benefits currently observed. In addition, changes in the RFG program could have adverse consequences for conventional gasoline as well.

Within California, lifting the oxygen requirement will result in greater flexibility to maintain and enhance emission reductions, particularly as California pursues new formulation requirements for gasoline.

In order to ensure that there is no loss of current air quality benefits, EPA should seek appropriate mechanisms for both the RFG Phase II and Conventional Gasoline programs to define and maintain in RFG II the real world performance observed in RFG Phase I while preventing deterioration of the current air quality performance of conventional gasoline.²

There are several possible mechanisms to accomplish this. One obvious way is to enhance the mass-based performance requirements currently used in the program. At the same time, the panel recognizes that the different exhaust components pose differential risks to public health due in large degree to their variable potency. The panel urges EPA to explore and implement mechanisms to achieve equivalent

²The Panel is aware of the current proposal for further changes to the sulfur levels of gasoline and recognizes that implementation of any change resulting from the Panel's recommendations will, of necessity, need to be coordinated with implementation of these other changes. However, a majority of the panel considered the maintenance of current RFG air quality benefits as separate from any additional benefits that might accrue from the sulfur changes currently under consideration.

or improved public health results that focus on reducing those compounds that pose the greatest risk.

Reducing the Use of MTBE

12. The Panel agreed broadly that, in order to minimize current and future threats to drinking water, the use of MTBE should be reduced substantially. Several members believed that the use of MTBE should be phased out completely. The Panel recommends that Congress act quickly to clarify federal and state authority to regulate and/or eliminate the use of gasoline additives that pose a threat to drinking water supplies³.

Initial efforts to reduce should begin immediately, with substantial reductions to begin as soon as Recommendation 10 above - the removal of the 2% oxygen requirement - is implemented⁴. Accomplishing any such major change in the gasoline supply without disruptions to fuel supply and price will require adequate lead time - up to 4 years if the use of MTBE is eliminated, sooner in the case of a substantial reduction (e.g. returning to historical levels of MTBE use).

The Panel recommends, as well, that any reduction should be designed so as to

³Under §211 of the 1990 Clean Air Act, Congress provided EPA with authority to regulate fuel formulation to improve air quality. In addition to EPA's national authority, in §211(c)(4) Congress sought to balance the desire for maximum uniformity in our nation's fuel supply with the obligation to empower states to adopt measures necessary to meet national air quality standards. Under §211(c)(4), states may adopt regulations on the components of fuel, but must demonstrate that 1) their proposed regulations are needed to address a violation of the NAAQS and 2) it is not possible to achieve the desired outcome without such changes.

The panel recommends that Federal law be amended to clarify EPA and state authority to regulate and/or eliminate gasoline additives that threaten water supplies. It is expected that this would be done initially on a national level to maintain uniformity in the fuel supply. For further action by the states, the granting of such authority should be based upon a similar two part test:

1) states must demonstrate that their water resources are at risk from MTBE use, above and beyond the risk posed by other gasoline components at levels of MTBE use present at the time of the request.

2) states have taken necessary measures to restrict/eliminate the presence of gasoline in the water resource. To maximize the uniformity with which any changes are implemented and minimize impacts on cost and fuel supply, the panel recommends that EPA establish criteria for state waiver requests including but not limited to:

- a. Water quality metrics necessary to demonstrate the risk to water resources and air quality metrics to ensure no loss of benefits from the federal RFG program.
- b. Compliance with federal requirements to prevent leaking and spilling of gasoline.
- c. Programs for remediation and response.
- d. A consistent schedule for state demonstrations, EPA review, and any resulting regulation of the volume of gasoline components in order to minimize disruption to the fuel supply system.

⁴Although a rapid, substantial reduction will require removal of the oxygen requirement, EPA should, in order to enable initial reductions to occur as soon as possible, review administrative flexibility under existing law to allow refiners who desire to make reductions to begin doing so.

not result in an increase in MTBE use in Conventional Gasoline areas.

13. The other ethers (e.g. ETBE, TAME, and DIPE) have been less widely used and less widely studied than MTBE. To the extent that they have been studied, they appear to have similar, but not identical, chemical and hydrogeologic characteristics. The Panel recommends accelerated study of the health effects and groundwater characteristics of these compounds before they are allowed to be placed in widespread use.

In addition, EPA and others should accelerate ongoing research efforts into the inhalation and ingestion health effects, air emission transformation byproducts, and environmental behavior of all oxygenates and other components likely to increase in the absence of MTBE. This should include research on ethanol, alkylates, and aromatics, as well as of gasoline compositions containing those components.

14. To ensure that any reduction is adequate to protect water supplies, the Panel recommends that EPA, in conjunction with USGS, the Departments of Agriculture and Energy, industry, and water suppliers, should move quickly to:
 - a. Conduct short-term modeling analyses and other research based on existing data to estimate current and likely future threats of contamination;
 - b. Establish routine systems to collect and publish, at least annually, all available monitoring data on:
 - use of MTBE, other ethers, and Ethanol,
 - levels of MTBE, Ethanol, and petroleum hydrocarbons found in ground, surface and drinking water,
 - trends in detections and levels of MTBE, Ethanol, and petroleum hydrocarbons in ground and drinking water;
 - c. Identify and begin to collect additional data necessary to adequately assist the current and potential future state of contamination.

The Wintertime Oxyfuel Program

The Wintertime Oxyfuel Program continues to provide a means for some areas of the country to come into, or maintain, compliance with the Carbon Monoxide standard. Only a few metropolitan areas continue to use MTBE in this program. In most areas today, ethanol can and is meeting these wintertime needs for oxygen without raising volatility concerns given the season.

15. The Panel recommends that the Wintertime Oxyfuel program be continued (a) for as long as it provides a useful compliance and/or maintenance tool for the affected states and metropolitan areas, and (b) assuming that the clarification of state and federal authority described above is enacted to enable states, where necessary, to

regulate and/or eliminate the use of gasoline additives that threaten drinking water supplies.

Recommendations for Evaluating and Learning From Experience

The introduction of reformulated gasoline has had substantial air quality benefits, but has at the same time raised significant issues about the questions that should be asked before widespread introduction of a new, broadly-used product. The unanticipated effects of RFG on groundwater highlight the importance of exploring the potential for adverse effects in all media (air, soil, and water), and on human and ecosystem health, before widespread introduction of any new, broadly-used, product.

16. In order to prevent future such incidents, and to evaluate of the effectiveness and the impacts of the RFG program, EPA should:
 - d. Conduct a full, multi-media assessment (of effects on air, soil, and water) of any major new additive to gasoline prior to its introduction.
 - e. Establish routine and statistically valid methods for assessing the actual composition of RFG and its air quality benefits, including the development, to the maximum extent possible, of field monitoring and emissions characterization techniques to assess "real world" effects of different blends on emissions
 - f. Establish a routine process, perhaps as a part of the Annual Air Quality trends reporting process, for reporting on the air quality results from the RFG program.
 - g. Build on existing public health surveillance systems to measure the broader impact (both beneficial and adverse) of changes in gasoline formulations on public health and the environment.

Appendix A

In reviewing the RFG program, the panel identified three main options (MTBE and other ethers, ethanol, and a combination of alkylates and aromatics) for blending to meet air quality requirements. They identified strength and weaknesses of each option:

MTBE/other ethers	A cost-effective fuel blending component that provides high octane, carbon monoxide and exhaust VOCs emissions benefits, and appears to contribute to reduction of the use of aromatics with related toxics and other air quality benefits; has high solubility and low biodegradability in groundwater, leading to increased detections in drinking water, particularly in high MTBE use areas. Other ethers, such as ETBE, appear to have similar, but not identical, behavior in water, suggesting that more needs to be learned before widespread use
Ethanol	An effective fuel-blending component, made from domestic grain and potentially from recycled biomass, that provides high octane, carbon

monoxide emission benefits, and appears to contribute to reduction of the use of aromatics with related toxics and other air quality benefits; can be blended to maintain low fuel volatility; could raise possibility of increased ozone precursor emissions as a result of commingling in gas tanks if ethanol is not present in a majority of fuels; is produced currently primarily in Midwest, requiring enhancement of infrastructure to meet broader demand; because of high biodegradability, may retard biodegradation and increase movement of benzene and other hydrocarbons around leaking tanks.

Blends of Alkylates and Aromatics	Effective fuel blending components made from crude oil; alkylates provide lower octane than oxygenates; increased use of aromatics will likely result in higher air toxics emissions than current RFG; would require enhancement of infrastructure to meet increased demand; have groundwater characteristics similar, but not identical, to other components of gasoline (i.e. low solubility and intermediate biodegradability)
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Appendix B

Members of the Blue Ribbon Panel

Dan Greenbaum, Health Effects Institute, Chair
 Mark Buehler, Metropolitan Water District, So. California
 Robert Campbell, CEO, Sun Oil
 Patricia Ellis, Hydrogeologist, Delaware Department of Natural Resources and Environmental Conservation
 Linda Greer, Natural Resources Defense Council
 Jason Grumet, NESCAUM
 Anne Happel, Lawrence Livermore Nat. Lab
 Carol Henry, American Petroleum Institute
 Michael Kenny, California Air Resources Board
 Robert Sawyer, University of California, Berkeley
 Todd Sneller, Nebraska Ethanol Board
 Debbie Starnes, Lyondell Chemical
 Ron White, American Lung Assoc.

Federal representatives (Non-Voting):

Robert Perciasepe, Air and Radiation, US EPA
 Roger Conway, US Dept. of Agriculture
 Cynthia Dougherty, Drinking Water, U.S. EPA
 William Farland, Risk Assessment, US EPA
 Barry McNutt, US DOE
 Margo Oge, Mobile Sources, US EPA
 Samuel Ng, Underground Tanks, US EPA
 Mary White, ATSDR
 John Zogorski, USGS

Mr. GREEN. Again, we need to make sure that these industries have developed MTBE because Congress mandated the 2 percent standard; that if we are going to replace it we should make sure that they, as best as possible, can respond to whatever other additive we need.

Mr. BILIRAKIS. The gentleman certainly has a very big interest in this issue, and I appreciate that. We have a very lengthy program here today, and we have got to stay within that 5-minute rule.

Mr. GREEN. I understand, Mr. Chairman.

Mr. BILIRAKIS. Mr. Upton, opening statement.

Mr. UPTON. Thank you, Mr. Chairman. And I will not use much of my time. I just want to thank you for having this hearing.

I want to state for the record that I support oxygenated fuel, but I do not support the use of MTBEs. As I see it, this alleged cure is worse than the disease, and we need to get this stuff out of every gas tank.

I am glad to see Mr. Franks here. I am a cosponsor of his legislation which accomplishes this. I guess, just in commenting to my friend from Texas, Mr. Green, EPA's Alamo might be right here.

I yield back my time.

Mr. BILIRAKIS. I thank the gentleman.

Mr. Barrett.

Mr. BARRETT. Thank you, Mr. Chairman.

I want to personally thank you for agreeing to hold this hearing. This is an issue that I have been involved with now for over 5 years, and this is basically the day I have been waiting for, a chance to talk about the impact of MTBE. I was first exposed to this issue back in January 1995.

I represent Milwaukee, Wisconsin, one of the communities that is required to use reformulated gasoline. MTBE was the initial mixture that was used in my community. But within weeks of the start of the program, citizen complaints of the fuel causing headaches, dizziness and nausea began pouring into the United States EPA, my office, and the offices of other Members of Congress in southeastern Wisconsin.

We asked the EPA to come to the community, which it did, and had a very, very long and contentious hearing in Milwaukee with many, many complaints from the citizens about their health concerns.

Trying to give the most positive reading to the response of the EPA, it was along the lines of, you don't know what you are talking about. There is nothing wrong with it.

As a result of that hearing and the public outcry, though, what happened was ethanol was substituted for MTBE in my community and the uproar died down. Obviously, we didn't hear much about it on the national level until several years later when we started hearing about the groundwater contamination in California and other States.

What concerns me greatly today is, having sat through that hearing and really in many ways the condescending attitude of, well, it is just where this Midwestern town where this anomaly is occurring, so we can ignore it. But I look at the memorandum, the April 1987, memo on EPA letterhead prepared for a division director

briefing on MTBE, and that the health effects of MTBE cited in this memo are, "chronic inhalation toxicity including neurotoxic, hematologic and oncogenetic effects."

This was never told to us at that meeting in Milwaukee. This was the first time that I have learned of this. This memo is from 1987. And there were 600 people in that room, and no one from EPA acknowledged that this memorandum was in existence. Again, nothing was noted until several years later when the groundwater problem occurred.

But this same memo, in the same memo, the author writes, "It is possible that this problem could rapidly mushroom due to leaking underground storage tanks at service stations. The tendency for MTBE to separate from the gasoline mixture into groundwater could lead to widespread drinking water contamination." Again, this is from the April 1987, memo.

I am totally baffled as to why the EPA, the agency that is responsible for clean air and clean water, basically said for a decade that there was no problem, and you have an April 1987, memo saying there could be a problem. Those of us in good conscience who, frankly, trusted the EPA and were told don't worry, there is not a problem. There is something bizarre in your community. We are getting no complaints from any other part of this country. To not let the elected officials from that area know that this memo was in existence to me is unconscionable.

I look forward to this hearing to get the answers from the EPA as to why we were not told of this when we, the elected officials, were standing in front of 600 angry constituents and we are told to tell them there is no problem.

I yield back the balance of my time.

Mr. BILIRAKIS. Mr. Greenwood for an opening statement.

Mr. GREENWOOD. Thank you, Mr. Chairman.

I also want to thank you for holding this hearing today to discuss the national implementation of the Reformulated Gasoline Program and the impact of oxygenates required in RFG on human health and the environment.

As you know, the Federal RFG Program established in the Clean Air Act Amendments of 1990 and implemented in 1995 has provided substantial reduction in the emissions of a number of air pollutants for motor vehicles, most notably volatile organic compounds, which are precursors of ozone, carbon monoxide, and mobile source air toxics like benzene, in most cases resulting in emissions reductions that exceed those required by law.

Employed to achieve the reduced emission levels is RFG containing 2 percent oxygen by weight. Currently, more than 85 percent of RFG contains the controversial oxygenate methyl tertiary butyl ether, MTBE, and approximately 8 percent contains ethanol, a domestic fuel-blending stock made from grain.

As we all know, the unfortunate side effect of the use of MTBE is its likelihood to contaminate ground and surface water because of its persistence and its mobility in water. That has led to an increasing number of detections of MTBE in our drinking water, with between 5 percent and 10 percent of drinking water supplies in high oxygenate use areas showing at least detectable amounts of MTBE.

In my home State of Pennsylvania, our Secretary of Pennsylvania's Department of Environmental Protection has indicated to me that MTBE has undoubtedly made its way into the surface and groundwaters of Pennsylvania and that there are several sites where MTBE has contaminated private drinking water wells above Pennsylvania's clean-up standards.

This reality, combined with the results of the summer of 1999 United States Geological Survey study, which sampled a number of sites randomly in my district, including Bucks and Montgomery Counties, a small portion of Berks County and parts of New Jersey where RFG has been sold since 1995, alarms me.

Of the 18 wells sampled, seven showed levels of MTBE around detectable levels. The levels found were very low, less than one part per billion, and not yet, and I emphasize yet, a health or environmental concern.

Regardless, the findings do indicate that MTBE could be making its way into drinking water supplies from nonpoint sources such as deposition from the air or residential gasoline spills. This is unacceptable.

In Pennsylvania, almost all RFG contains MTBE since ethanol is not a cost-effective oxygenate in our area. It is for this reason that I introduced legislation, H.R. 3449, permitting the States referred to in section 184(a) of the Clean Air Compact, and those States are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont, to petition the Environmental Protection Agency's administrator to waive or reduce the oxygenate requirement in RFG.

Furthermore, my legislation attempts to ensure that the clean air benefits achieved to date and attributed to the use of RFG will not be eroded by the waiver of the 2 percent oxygenate requirement. Overall, my approach will provide States and refiners with the necessary flexibility to cost effectively reduce MTBE from RFG.

Once again, Mr. Chairman, I thank you for holding today's hearing. I look forward to working with the committee to craft a solution to this looming national crisis.

Mr. BILIRAKIS. I thank the gentleman.

Mr. Stupak.

Mr. STUPAK. I waive my opening, Mr. Chairman.

Mr. BILIRAKIS. I appreciate that.

Mr. Bilbray.

Mr. BILBRAY. Thank you, Mr. Chairman.

Mr. Chairman, I want to thank you for not only holding this hearing but for your patience with my constant reminders that this issue is still hanging out there and has been hanging out there since I first introduced this piece of legislation in 1996.

Mr. Chairman, I want to commend my colleague from New Jersey, because I think he articulated quite clearly what the real issue is here. While some of our colleagues go back and forth about this product or this substance, and refer to the problem as just some substance that is introduced into the gasoline, I think my colleague from New Jersey has pointed out that the real problem is not ether or ethanol. The real problem is a Federal mandate that is not re-

flected in the scientific data of the year 2000. I want to thank him for that.

I think that what we need to point out, that in 1990—and I don't know if you were here in 1990—but I am sure the gentleman probably voted for this requirement because it was the best science we had available. It was the best approach available in 1990.

Now, I wasn't here. I was sitting on the State Air Resources Board of the State of California, and we were developing strategies and reviewing the Federal mandates. And because we had the flexibility in California to look at the available technology by 1992, it became obvious to scientists that the 2 percent mandate was obsolete, and was not only obsolete, it was also counterproductive.

It is not just an issue of groundwater. It is the fact that I would ask my colleagues here, is the 2 percent mandate some magic number? What scientific data do we have to justify a 2 percent mandate, rather than a 3 percent or 1 percent by weight? The point is, I think as the gentlemen from New Jersey pointed out, it is time for us to review and update this mandate.

Now, we can blame the EPA, and we can blame the manufacturers of different substances. But we are working around the problem. We need to look to ourselves. There was a good effort made here in Washington in 1990. It was the best we could do at that time. Since 1994, I have been trying to get Washington to revisit this thing and upgrade; and I thank the gentleman from New Jersey for pointing that out.

Mr. Chairman, when it comes down to this battle of where we go with this, I just ask us to take a look at the fact that my bill was first introduced long before the MTBE issue was brought up. That bill was introduced because of air pollution concerns.

The right type of technology, the right results or outcome from oxygenates is what we should be shooting for. And the best scientists around the world have come to the conclusion that there are times that the 2 percent mandate is not only not productive, it is destructive to the environment, not just the water but the air.

So I am asking us today to take a look at the challenge of doing better. The biggest problem with this town is not that it tries new things, and it is not that this town makes mistakes. The problem with this town is that it doesn't have the bravery or the intestinal fortitude to go back and say we might have made a mistake, let's do it better.

Now, I am not saying you made a mistake in the year 1990. I am saying it is a mistake that we have waited since 1994 to update this regulation. The 2 percent mandate is an air pollution and water pollution issue. The mandate is the problem, Mr. Chairman, not ether or ethanol.

Now, I ask you to just consider, that we waited a long time for this report from the EPA's Blue Ribbon committee. This committee report that we awaited so long before we took action made it clear that, within California, lifting the oxygen requirement now would result in greater flexibility to maintain and enhance the regulations, the emissions reductions, especially as California goes to its phase 3 gasoline. Outside of California, though, it says we need to make sure we have the protocols and that we have the standards

and that we have the systems in place to make sure that the pulling off of the 2 percent doesn't mean a drop-back.

I challenge our panels and the members here to take this finding from the Blue Ribbon committee and talk about what we have to do in the rest of the country to be able to give the air pollution and water pollution safeguards for the rest of the Nation that the Blue Ribbon committee and EPA has already identified for California.

I ask us not to be fighting back and forth between one industry and another. Texas should not need to fight the Midwest. What we should be talking about is how do we make sure that the air and the environment gets cleaned up.

Let me remind you, this is the Clean Air Act. This isn't the corporate subsidy act. This isn't the corporate monopoly act. This is the Clean Air Act. Can we talk about the air and the environment first and talk about corporate profits afterwards?

Thank you, Mr. Chairman. I yield back.

Mr. BILIRAKIS. Mr. Shadegg for an opening statement.

I would point out that Mr. Shimkus was actually the first member in this room, but he is not on the subcommittee; and for that reason, he has to wait his turn.

Mr. Shadegg.

Mr. SHADEGG. I am sure Mr. Shimkus will enlighten us when he does get his turn.

Mr. Chairman, I will be brief, and I will submit my opening statement. But let me simply join the others in commending you for holding this hearing. It is extremely important that we proceed on this topic and for having the courage and fortitude to get started on this issue.

I also want to simply say in my statement itself that, like many other States, my congressional district is under the mandate to use oxygenated fuels, and MTBE in fact is the oxygenate that is being used in my congressional district in Phoenix, Arizona.

Like many other areas where MTBE is currently in use, we have begun to discover that MTBE is being found in our water supply, and there is deep concern about that. Indeed, in the desert Southwest, in Arizona where I live, water is vital to our survival, and we simply cannot afford to allow our water supply to be polluted.

With that, Mr. Chairman, let me simply say I want to associate myself with the remarks of my colleague from California, Mr. Bilbray. He has been a leader in this fight from the outset. I have tried to support him at every turn. California is a neighboring State. The reality is that California has discovered how to produce cleaner fuel that reduces the air pollution more than the mandated system that we have in place right now.

I think the remarks he just made illustrating that looking backward and pointing blame at the EPA or others is perhaps alluring and may make for good political points, but the challenge for us is to look forward and to look for how we solve this problem.

I think, importantly, in that area, it is important that we look at what our limitations are. I would suggest that our limitations are that it takes longer to pass legislation that specifies how specifically you are to clean the air than science moves. And in point of fact, that is what we discovered.

The RFG Program was well intended. But by specifying the particular way in which the air had to be cleaned and the particular materials that had to be used to clean it, what we did is mandate a single solution, and science has now proven that that was a bad idea.

I think we need to recognize the limitation of the U.S. Congress in moving legislation quickly enough. I think we ought to recognize that science moves faster in this area than we do. I think what we need to do is set standards but not prescribe solutions and not tell the industry how to achieve these goals.

I think Mr. Bilbray has pointed out quite accurately where there are circumstances where the 2 percent may be quite appropriate and circumstances where 2 percent may be very inappropriate.

I think we need to make sure that, as we move forward, we recognize our limitations and we act responsibly and we recognize that science can deal with these problems better than we can legislatively.

With that, Mr. Chairman, I yield back.

Mr. BILIRAKIS. Thank you.

[The prepared statement of Hon. John Shadegg follows:]

PREPARED STATEMENT OF HON. JOHN B. SHADEGG, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF ARIZONA

Thank you, Mr. Chairman. I commend you for scheduling today's hearing.

My colleague Congressman Brian Bilbray (R-CA) has been a leader in bringing the problems of methyl tertiary butyl ether (MTBE) in California to the attention of the Congress and this committee. Now, with the recent *60 Minutes* piece on MTBE contamination in ground water, we see that the MTBE problem is not confined to California.

Indeed, my state of Arizona has experienced incidents of MTBE contamination in both ground water and in lakes throughout the state. It is imperative that Arizona and other states be given the power and flexibility to address this potential health risk to their citizens. Unfortunately, federal regulations hamstring Arizona's ability to resolve this challenge in a manner which best suits her local needs and concerns.

I believe that Congress, through the *Clean Air Act of 1990*, erred in mandating the manner in which states and localities must meet air standards instead of setting the air quality goal to be achieved. By including a two-percent oxygenate requirement in the federal reformulated gasoline (RFG) standard, the federal government has inhibited Arizona and other states from exercising the flexibility needed to solve their own local air quality problems in ways which best meet their needs.

MTBE is a potentially dangerous pollutant which presents more health risks by its presence in our drinking water than it offers in air quality improvements. Because of the federal oxygenate requirement, however, Arizona is left with only one alternative to MTBE in its RFG program; ethanol. Although ethanol offers some air quality benefits, its negative aspects outweigh its positive qualities in Arizona. First, ethanol is considerably more expensive than alternative RFGs, and this cost could rise if use of MTBE, its major competitor in the oxygenated fuels area, is reduced or eliminated. Second, because of ethanol's extreme volatility in hot weather, it is entirely unsuited to Arizona's needs, particularly in the summer when temperatures regularly reach 120 degrees Fahrenheit.

Mr. Chairman, it is imperative that Congress remove the two-percent oxygenate requirement and enable states to address the health concerns posed by MTBE in a cost-effective manner commensurate with the differing conditions and needs of individuals states. I plan to introduce legislation to this effect.

Again, I thank you, Mr. Chairman, for holding this important hearing, and I look forward to hearing the testimony of the panelists.

Mr. BILIRAKIS. Finally, Mr. Shimkus for an opening statement.

Mr. SHIMKUS. Thank you, Mr. Chairman. I thank you for letting me join your committee today. I do serve on the Finance and Haz-

ardous Material, so maybe the hazardous material aspect of my work falls in line with this hearing.

I would ask unanimous consent that my full statement be submitted for the record.

Mr. BILIRAKIS. Without objection. And your name is not Shewmake, it is Shimkus of course.

Mr. SHIMKUS. That is what my mom calls me, but I am called a lot of things here in Washington, so I can respond.

But, again, I do appreciate it; and I will summarize.

I want to make sure that I welcome Director Skinner from the Illinois EPA. He is a constituent of mine, and he has worked in the Environmental Protection Agency and those issues around Illinois for many, many years, and he is going to testify today. So I want to welcome Director Skinner. I know he is somewhere around here.

And, also, I want to draw my colleagues' attention to Dr. Graboski, who is going to be in the fourth panel. If you want to listen to a scientist who has studied these issues, I think you will find his testimony and his answers to the questions quite enlightening.

I am going to just end by saying what we have heard in the opening statements so far is that MTBE pollutes groundwater. The oxygenated program is good for clean air. And I will echo the comments of my colleague, Dr. Ganske, who has helped work with me and helped me get on this committee or hearing. Especially with the oil shortages, the high prices, with the renewable resource, you know ethanol is a great answer. We still have to keep in the mix of cleaner air, and we are going to fight to make sure that is part of our clean air portfolio.

With that, Mr. Chairman, I yield back my time.

Mr. BILIRAKIS. I thank the gentleman. I know he is very interested in the subject, and it is good to have him here with us.

[Additional statements submitted for the record follow:]

PREPARED STATEMENT OF HON. CLIFF STEARNS, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF FLORIDA

Thank you, Mr. Chairman. I am pleased that we are moving forward on this important issue. We must address the problems that have resulted from the use of reformulated gasoline with oxygenates.

Problems with MTBE must be resolved. Clean air is a priority in our nation, but we must also consider the consequences of adding oxygenates—like MTBE to gasoline. As we know, one such consequence has been groundwater contamination. Common sense tells us that the solution to one problem should not be the cause of another.

MTBE has raised important questions that must be answered; such as how useful are oxygenates in gasoline? What methods if any are being developed for removing MTBE from groundwater supplies? Are the studies there to prove that oxygenates actually improve the air quality?

While I support environmental performance standards for states and industries, I do not support coupling those performance standards with unreasonable mandates. An unreasonable mandate to me is a mandate that hasn't been studied before it is implemented. An ounce of prevention in this case could have prevented a pound of cure. I do not believe that the figures are there to support using oxygenates in gasoline.

My hope is that eventually all fifty states will be given the flexibility to meet Clean Air requirements without the oxygenate mandate. From articles and studies that I have reviewed, I have found very little if any evidence to show that the oxygenates actually improve the air quality.

One question that I am particularly curious about is the safety of our gasoline storage tanks. I hope that our panel members will be able to answer what role faulty gasoline tanks have played in this situation. This issue, in my opinion, is in-

separable from the reformulated gasoline issue. We must insure that we are diagnosing the whole problem and not simply one of the symptoms of the whole problem.

Mr. Chairman, I am pleased that we are holding a hearing on this important issue.

Thank you.

PREPARED STATEMENT OF HON. LOIS CAPPS, A REPRESENTATIVE IN CONGRESS FROM
THE STATE OF CALIFORNIA

Thank you, Mr. Chairman, for holding this hearing. As you know, this is an issue of great importance to my constituents on California's Central Coast.

While I understand the environmental benefits of the reformulated gasoline (RFG) program, particularly the significant air quality improvements achieved as a result of the program, I am very concerned over the continued use of a particular oxygenate used in the program, methyl tertiary butyl ether (MTBE).

MTBE poses a real and serious risk to public health. MTBE has been identified by the federal Environmental Protection Agency (EPA) as a possible human carcinogen that has contaminated groundwater supplies nationwide. In my home state of California this is particularly disconcerting, as a large portion of the state's population relies on groundwater for its source of drinking water. Just today, my hometown paper reported on traces of MTBE contaminating groundwater in Cambria, California.

As a result of the significant risk to the state's water supply, Governor Davis issued an executive order to phase out MTBE by the year 2002. To comply with the Governor's mandate, California has requested a waiver by EPA of the oxygenate content requirement in the federal Clean Air Act.

California already leads the nation in air pollution control programs. We already have the nation's strongest "cleaner-burning" gasoline standards, which are stronger than federal clean air standards. California has adopted a performance-based program that allows gasoline refiners to use innovative fuel formulas to meet clean air requirements—without mandating potentially harmful additives such as MTBE.

I am especially interested to hear the testimony of Robert Perciasepe, Assistant Administrator for Air and Radiation for the EPA. I am concerned about a recent statement made by Mr. Perciasepe in response to California's request for a waiver from the oxygenate mandate. In a letter to the California Environmental Protection Agency, Mr. Perciasepe indicated that it is the hope of EPA to complete an assessment of the request by early summer. This is very disappointing. I cannot emphasize enough how important it is for EPA to reach a final determination well before this proposed time frame. Our state just cannot wait until summer. The state of California originally submitted its waiver request in April, 1999. Gasoline refiners need to make crucial business decisions very soon on the kinds of investments that would be required to meet the oxygenate mandates. If they are not given enough lead time to make these changes, there could be a serious disruption in gasoline supply in California, which in turn would raise gas prices beyond their already astronomical level.

I look forward to hearing from our witnesses today. It is also my hope that EPA will do everything in its power to expedite California's oxygenate waiver request and I am committed to working with the Agency to this end.

PREPARED STATEMENT OF HON. JOHN D. DINGELL, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF MICHIGAN

Mr. Chairman, I commend you for holding this hearing today. Several of my colleagues requested this hearing last Fall, and I thank you for working with them to bring these witnesses before us.

It is somewhat curious that the title of this hearing is "The National Implementation of the Reformulated Gasoline Program." This is a complex program, currently entering Phase II as required by the Clean Air Act—and the composition of fuels is equally as complex. This is a program about which we could have many informative hearings, and I would welcome those hearings. But the primary concern that has brought us here today—the one that has focused our inquiry into this complex program—is the presence of MTBE in drinking water supplies. I hope that we do not leave the impression, as did a recent *60 Minutes* piece on this issue, that the Clean Air Act (or the reformulated gasoline program) mandates the use of MTBE. Similarly, I hope that we do not reach hasty conclusions about the reformulated gasoline program itself as a result of a hurried effort to thwart a substance that has moved through groundwater much faster than we have gained firm understanding

of its potential threat to health or the environment. As I am sure this phrase has been used already in this debate, it bears repeating: we would not want to throw the baby out with the bath water.

I expect that more than a few witnesses here today will confirm that the reformulated gasoline program has been a success. That success often has been attributed to the use of oxygenates in reformulated gasoline. Although some studies indicate that we can achieve environmental benefits without the use of oxygenates, I am not aware of evidence of any notable down-side of oxygenate use, other than the spread of MTBE—the most frequently used oxygenate—from leaking tanks through water. As we consider any revision to the reformulated gasoline provisions, I hope that we will be mindful of *all* of the environmental benefits of the current formulation and that we will agree on a policy goal to maintain those benefits. In addition, we must be mindful of the effect statutory and regulatory changes may have on gasoline supply, particularly during a time when gasoline prices are the highest we have witnessed during this decade.

I do not know whether MTBE merits more attention than we have given to other constituents of gasoline. I will hear from the witnesses on that point. I note however, that EPA has known since 1987, perhaps earlier, that MTBE could migrate into water supplies. Yet, to date, EPA has obtained little information about the health effects of ingestion of MTBE. It was not until 1999 that EPA included MTBE on a list of substances to be monitored by public water systems. That monitoring will not begin until 2001. It was not until 1997 that the Agency issued a drinking water advisory for MTBE based on consumer acceptability. It was not until last month that EPA initiated a process to determine whether MTBE could be banned under TSCA—a lengthy process most notably employed in the past (unsuccessfully) to address asbestos. I question such delay if this substance, which has been added to gasoline for many years, is a public health threat deemed so unacceptable as to require immediate passage of federal law to remove the substance from public use.

I do not mean to diminish the significance of the expense and hardship that communities with drinking water supplies contaminated with MTBE currently face. Rather, I recommend a well-informed approach to the measures we may adopt to address this problem. *First*, in addition to careful consideration of the current oxygenate requirement, for example, this Committee should pay ample attention to the implementation of preventative measures such as the underground storage tank program, and I suspect that may have been laggard. The states by and large implement this program. The data that we, or the EPA, have been able to obtain about tank compliance has been less-than-comprehensive. We know, for instance, that some states inspect their tanks for compliance only once every five to seven years. *Second*, we also know that neither the federal government, nor most states, have the ability to regulate above-ground mechanisms for dispensing gasoline. These mechanisms may also be the source of spills and leaks of gasoline.

It seems that this Committee has much to learn about this topic. I look forward to receiving the testimony of these witnesses.

Mr. BILIRAKIS. Finally, the very patient colleagues of ours who have been sitting there, I guess you are accustomed to that probably, ordinarily, because you are usually up here.

Mr. Franks from New Jersey, you have 5 minutes. Hopefully, you won't take all 5, but certainly don't take any more than that. Please proceed.

STATEMENT OF HON. BOB FRANKS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. FRANKS. Mr. Chairman, almost 10 months ago, on May 6, 1999, I testified before this subcommittee to lend my support to H.R. 11, a bill that would allow the STATE OF California to opt out of the 2 percent oxygenate requirement of the Clean Air Act. My interest in today's hearing stems from compelling evidence that the same 2 percent oxygenate requirement for gasoline has led to a serious threat to public health caused by the use of MTBE.

We have already heard that MTBE is highly soluble. It moves quickly through soil and groundwater when gasoline leaks from underground storage tanks. Mr. Chairman, in my home State of New

Jersey, the Department of Environmental Protection has reported that 400 public wells and 65 private wells have been tainted with MTBE.

Last July, a Federal Blue Ribbon Panel study concluded that in those areas that are required to use reformulated gasoline, MTBE has contaminated 5 to 10 percent of those drinking water supplies. Immediately after that study was released, EPA Administrator Carol Browner echoed the conclusion that MTBE poses a risk to water supplies. She indicated the need to reduce use of MTBE gasoline, "as quickly as possible." However, 7 months later, EPA has done nothing to regulate MTBE; and, consequently, it continues to contaminate drinking water across the country.

Last spring, I sponsored legislation H.R. 1367 that would phase-out the use of MTBE as a fuel additive over a 3-year period. Mr. Chairman, if the EPA will not accept responsibility and promptly use its authority under the Toxic Substances Control Act to ban the use of MTBE, then Congress must act.

I recently obtained an internal EPA memo that was referred to earlier by Mr. Barrett, dated April 6, 1987. Let me just read an additional sentence that preceded the section that Mr. Barrett alluded to, and I quote: "Known cases of drinking water contamination have been reported in four States. These cases affect individual families, as well as towns of up to 20,000 people. It is possible that this problem could rapidly mushroom due to leaking underground storage tanks at service stations. The tendency for MTBE to separate from the gasoline mixture into groundwater could lead to widespread drinking water contamination."

Mr. Chairman, this memo clearly shows the EPA has known about the dangers that MTBE poses for our drinking water supply. It is important to note that this memo was issued fully 8 years before the EPA initiated the Reformulated Gasoline Program. They issued it knowing full well that MTBE would be the oxygenate of choice for oil refineries.

It is simply inexcusable that a Federal agency which is responsible for protecting the public health and safety would allow the widespread use of a product that their own scientists had warned could pose a serious threat to the Nation's drinking water supply.

We still don't know nearly enough about the health consequences of consuming drinking water tainted with MTBE. However, this chemical has been found to cause cancer in animals. For this reason, I introduced H.R. 3536 that would require the National Institutes of Health to finally conduct a comprehensive study on the human health effects of ingesting or inhaling MTBE.

Mr. Chairman, if MTBE is allowed to continue to be the most widely used oxygenate in gasoline, contamination problems can be expected only to worsen. Existing water treatment systems have proven relatively ineffective at removing even low concentrations of MTBE.

My legislation would also further require that research be done into the design of cost-effective methods of removing MTBE from water supplies. To continue to threaten our clean water supply in an effort to achieve our clean air goals is simply unconscionable. It is time we admit that MTBE was a mistake and take immediate

action to remove it from our gasoline and, in turn, our drinking water supplies.

It is the obligation of this government to seek better and safer mechanisms through which to clean our air while we protect our Nation's precious supply of drinking water.

Mr. Chairman, again, I want to thank you. And I want to finally refer to Mr. Green's observations, and I concur with them, that no one would be enthusiastic about the prospect of drinking a material that was made merely to make our cars run better.

But I want to give to Mr. Green and to you, Mr. Chairman, a product called drinking water from the Metropolitan Water District of Southern California. And you see, Mr. Green, if you are in the area where that water district services hundreds of thousands—

Mr. BILIRAKIS. Please finish up.

Mr. FRANKS. [continuing] of water consumers, you have to drink a product that is made to make your car run better when you turn on your tap. There is no choice.

Thank you, Mr. Chairman.

[The prepared statement of Hon. Bob Franks follows:]

PREPARED STATEMENT OF HON. BOB FRANKS, A REPRESENTATIVE IN CONGRESS FROM
THE STATE OF NEW JERSEY

I would like to thank Chairman Bilirakis for convening this hearing and allowing me the opportunity to testify today.

Almost ten months ago, on May 6, 1999, I testified before this Subcommittee to lend my support to H.R. 11, a bill that would allow the State of California to opt out of the 2% oxygenate requirement of the Clean Air Act. Today, the discussion is about the nationwide impact of the Reformulated Gasoline, or RFG, Program.

There is conflicting information on whether reformulated gasoline has significantly improved air quality. I commend the Subcommittee's efforts to review the merits of the RFG Program. My interest in this stems from compelling evidence that the 2% oxygenate requirement for gasoline has led to a serious threat to public health caused by Methyl Tertiary Butyl Ether, or MTBE.

MTBE is the preferred fuel additive because of its low cost, ease of production, and favorable blending characteristics with gasoline. MTBE, a highly soluble compound, moves quickly through soil and groundwater when gasoline leaks from underground storage tanks or is spilled. For this reason, the additive has contaminated sources of drinking water, such as aquifers and lakes, across the country.

Mr. Chairman, in New Jersey, the Department of Environmental Protection has reported that 400 public wells and 65 private wells are tainted with MTBE. Last July, a federal Blue Ribbon Panel study concluded that MTBE has contaminated five to ten percent of drinking water nationwide. Immediately after the study's release, EPA Administrator Carol Browner recognized that MTBE poses a risk to water supplies. She indicated the need to reduce the use of MTBE in gasoline "as quickly as possible." Seven months later, EPA has still done nothing to regulate its use and, consequently, MTBE continues to contaminate drinking water across the country.

Last spring, I sponsored legislation, H.R. 1367, that would phase out the use of MTBE as a fuel additive over three years. If the EPA will not accept responsibility and promptly use its authority under the Toxic Substances Control Act to ban the use of MTBE, then Congress must act.

I recently obtained an internal EPA memo, dated April 6, 1987, on MTBE which states and I quote: "Known cases of drinking water contamination have been reported in four states. These cases affect individual families, as well as towns of up to 20,000 people. It is possible that this problem could rapidly mushroom due to leaking underground storage tanks at service stations. The tendency for MTBE to separate from the gasoline mixture into ground water could lead to widespread drinking water contamination." This clearly shows that EPA has known about water contamination problems with MTBE and that toxicity information was lacking. That was thirteen years ago and eight years before the EPA initiated the Reformulated Gasoline Program, knowing very well that MTBE would be the oxygenate of choice for oil refineries.

We still do not know about the health consequences of consuming drinking water tainted with MTBE. However, the chemical has been found to cause cancer in animals. For this reason, I introduced H.R. 3536, legislation that requires a comprehensive study on the human health effects of ingesting and inhaling MTBE.

Mr. Chairman, if MTBE continues to be the most widely used oxygenate in gasoline, contamination problems can be expected to worsen. Existing water treatment systems are relatively ineffective at removing even low concentrations of MTBE. H.R. 3536 would also require further research into the design of cost-effective methods for removing MTBE from water supplies.

To continue sacrificing clean water for clean air is simply irresponsible. It is time we admit that MTBE was a mistake and immediately remove it from our gasoline and drinking water supplies. We must seek better, safer mechanisms with which to clean the air while protecting our nation's precious supply of drinking water.

Again, I would like to thank Chairman Bilirakis for holding this hearing on the RFG Program and I encourage the Subcommittee to immediately ban the use of MTBE as a gasoline additive nationwide.

Mr. BILIRAKIS. Thank you.

The gentleman from Illinois, Mr. LaHood.

**STATEMENT OF HON. RAY LAHOOD, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF ILLINOIS**

Mr. LAHOOD. Thank you, Mr. Chairman.

I will not read my statement. I would like to read a couple of paragraphs from my statement.

I am here primarily—and I don't want to repeat what has been said. I have four ethanol-producing plants in my district. I think my district perhaps produces as much or more ethanol than perhaps any district in the country. I am really here to promote the use of ethanol as a clean-burning fuel.

If I may just read two paragraphs, and I will then have the rest of the statement entered into the record.

Last year, the National Academy of Science completed a study which addressed ethanol's air quality benefits and the impact of carbon monoxide on ozone formation. The study concluded that the additional carbon monoxide benefits of ethanol blended gasoline should be taken into account. Unfortunately, the EPA does not currently credit ethanol for these reductions under the RFG Program, which will make it harder to use ethanol in the program when phase 2 of that program is implemented. I would ask your committee to urge the EPA to allow these credits.

There are plenty of other things that I have said in my statement, some of which have already been stated and which the committee knows. I appreciate the chance to come and participate and appreciate the work that this subcommittee is doing. Thank you.

[The prepared statement of Hon. Ray LaHood follows:]

**PREPARED STATEMENT OF HON. RAY LAHOOD, A REPRESENTATIVE IN CONGRESS FROM
THE STATE OF ILLINOIS**

Mr. Chairman, thank you for giving me the opportunity to appear before you today. I wish to use this opportunity to express my support for the reformulated gasoline program (RFG). I will let the other panelists address the technical aspects of the RFG program, and limit my time to discuss the larger policy concerns the program currently faces.

Since the implementation of the RFG program, the benefits to air quality have been dramatic. The US Environmental Protection Agency (EPA) has estimated that the environmental benefits under Phase 2 of RFG program is equal to taking 16 million cars off the road each year. In 1998, the American Lung Association of Metropolitan Chicago credited the RFG program with being the single largest source of emissions reductions in the Chicago area.

As we begin to address the unintended side effects of the RFG program, most notably the reports of contamination of surface and ground water by MTBE, we need to make sure we do not unintentionally weaken the protections of the Clean Air Act. At first glance, the simple solution to the MTBE problem is to remove the oxygenate requirement from the RFG program, which would remove the need to use MTBE in reformulated gasoline. I believe that approach is misguided. The water contamination problem lies with the use of MTBE only, not with the oxygenate requirements in the RFG program. I believe that we can protect our water resources by restricting the use of MTBE, and keep the oxygenate requirements in the RFG program by using ethanol as an oxygenate additive in reformulated gasoline.

Ethanol already has a proven track record as a reliable RFG oxygenate. Over 95 percent of the gasoline sold in the Chicago area uses ethanol, instead of MTBE, as an oxygenate. Ethanol blended gasoline is also sold in Milwaukee, St. Louis, and in some locations in California. Given the potential problems associated with MTBE, I believe the US would be best served by focusing on ways to allow greater integration of ethanol into the RFG program.

The greatest stumbling blocks for integration of ethanol into the RFG program is the regulatory structure of the EPA. Under the current guidelines, gasoline refiners need to use specially tailored blend stocks when using ethanol, which increases the cost to the refiner. Last year, the National Academy of Sciences completed a study which addressed ethanol's air quality benefits and the impact of carbon monoxide on ozone formation. The study concluded that the additional carbon monoxide benefits of ethanol blended gasoline should be taken into account. Unfortunately, the EPA does not currently credit ethanol for these reductions under the RFG program, which will make it harder to use ethanol in the program when Phase 2 of the program is implemented this summer. I would ask your Committee to urge the EPA to allow these credits.

Finally, I hope you will consider how the RFG program affects our domestic ethanol industry. Since the implementation of the RFG program in 1990, over 40 ethanol facilities have been built, which expanded production from 850 million gallons to close to 1.5 billion gallons today. The industry also helps bolster the price of corn (which is at a near historic low) by approximately \$0.35/bushel because it utilizes over 600 million bushels of corn annually.

If the oxygenate provisions are maintained in the RFG program, the growth potential for the ethanol industry is strong, but I'm afraid for what will happen if that provision is removed.

I believe that we have the potential for a win-win situation here. We can continue to promote clean air legislation in our urban areas by maintaining the oxygenation requirements of the RFG program, protect our ground water by banning the use of MTBE, support our beleaguered corn prices and the American farmer, and contribute to the growth of our domestic ethanol industry.

Thank you

Mr. BILIRAKIS. Thank you, Ray.

Mr. Forbes.

STATEMENT OF HON. MICHAEL P. FORBES, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. FORBES. Mr. Chairman, thank you very much, and I would likewise ask that my full statement be admitted into the record.

Mr. BILIRAKIS. Without objection, that will be the case.

Mr. FORBES. I will make every effort to be brief, Mr. Chairman, and I thank you for the opportunity to be here and for your leadership on this question.

It is unfortunate that it has taken us as a Nation almost a decade to come to this point where we are trying to deal with some solutions. I would like to particularly thank my colleague from New Jersey, Mr. Pallone, for his leadership on this issue over the last 7 years, and all of my colleagues, frankly, who have made some very salient points about the problem of MTBE.

On Long Island, we have amongst the highest concentration of MTBE intrusion into our groundwater supply. We are the Nation's largest sole source aquifer, which is where we get our drinking

water. We found that over 300 private wells have been contaminated and 30 public wells. I am also delighted, though, that the Suffolk County Water Authority from Suffolk County, New York, is here today to testify about their outspoken need to ban MTBE.

I would like to separate myself from the comments of those who believe, however, that we might want to roll back the clock and eliminate the requirement for oxygenates. I think that the 1990 Clean Air Act went a long way, and we can see the results of that tremendous legislation across the country. When you drive across this country, you can see a marked change in our air quality, and I do not think we should be rolling back the clock. However, I think that the choice of the petroleum companies to use MTBE as the way to solve this problem with oxygenates is clearly wrong.

I would like to align myself with those who would like to see us ban this over the next 3 or 4 years and move to ethanol. I think that it is clear that we need to make that change as quickly as we can. We need time in this Nation to increase the supplies of ethanol and their availability.

I would align myself with Dr. Ganske's comments that the specious argument about the transportation cost is just that, that we can accommodate I think this change to ethanol. I am not the Forbes that spent any time in Iowa. So for that I would like to say that we do need to make this change, though.

I think there are some very important concerns as well, though. We do not know how to clean up MTBE. It is highly soluble. The technology is still being reviewed as to how to clean up this highly soluble reformulated gasoline that gets into our groundwater.

My legislation introduced earlier this week would put an emphasis on that. It would allow the Environmental Protection Agency to do what so many of us are frustrated that they have not done and that is to step up to the plate and take some very concerted and direct action to deal with this problem. We need to hook up to public water, though, those who are continuing to frankly suffer because they have shallow groundwater wells and their drinking water is being compromised.

Now, we don't know what the health effects—the long-term health effects of continued groundwater pollution by MTBE are. And that again is something that NIH and the Agency for Toxic Substances should be charged with the responsibility of understanding the long-term health consequences.

We all can remember that, many decades ago, the discovery of DDT was thought to be tremendous in stemming disease in this country, but we found out the solution was almost as bad as the problem. We do not want to come to the point in this country where we find out after several years or several decades that MTBE is as bad as the pollution that it is trying to conquer.

So I would, again, align myself with those who believe that we need to continue on the course that we have done with the 1990 Clean Air Act. We need to not roll back the safeguards, not eliminate the oxygenate.

We can have a great debate about what level of oxygenates are appropriate, but we need to ban MTBE, give the agencies, particularly EPA and NIH, the tools to deal with this problem, find the technology to clean up MTBE and, most of all, provide assistance

to those citizens, frankly, particularly those who don't have the means to hook up to public water, to do that.

In my own county of Suffolk in New York, we have over 50,000 people who are still dependent on private shallow wells in the sole source aquifer. Many of them have been compromised by MTBE, and I would urge that the leadership of this committee, which has been demonstrated over the last several years, particularly on this question, that we are able to move a bill to the floor. And I don't have any pride of authorship, but I just hope we can end the use of MTBE, give the appropriate agencies the tools to deal with this problem and, once and for all, restore some confidence that reformulated gasoline can help us clean up our air. But we don't need to go the route of continued use of MTBE.

Mr. Chairman, I thank you, the ranking member and members of the committee for the opportunity to testify here this morning. [The prepared statement of Hon. Michael P. Forbes follows:]

PREPARED STATEMENT OF HON. MICHAEL P. FORBES, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF NEW YORK

Mr. Chairman, thank you for holding a hearing on the critical topic of the reformulated gasoline program—which has done so much to help clean our air of toxic contaminants like benzene. Mr. Pallone, I also wish to thank you and commend you for all your hard work in this area, particularly regarding your proposal to phase out MTBE.

I am pleased to be joined here today by my colleagues, Mr. Franks and Mr. LaHood. Also, I am happy that my neighbors from the Suffolk County Water Authority are here to testify. I know that, based on their experience with MTBE in our Suffolk County water wells, they too are outspoken about the need to ban MTBE.

As you know, the gasoline additive MTBE (methyl tertiary butyl ether) is the result of the 1990 Clean Air Act, which mandated the use of oxygenates in gasoline. Oxygenates are additives designed to dilute concentrations of cancer-causing elements like benzene. Presently, only two substances are used as oxygenates—ethanol and MTBE.

Unfortunately, no studies were done on the potential health effects of MTBE prior to its use. Now, the United States, and Long Island in particular, faces a growing problem of water contaminated by MTBE. It is 30 times more soluble than any other element in gasoline—so it contaminates the groundwater very quickly. MTBE has now been detected in varying levels in groundwater in 49 states; 21 states have had at least one well shut down.

Because of Long Island's unique geology, MTBE has already had serious effects there. So far, MTBE has been found in over 300 private wells and 32 public wells in my county, Suffolk County, alone.

Furthermore, residents of Suffolk County are particularly vulnerable to MTBE contamination because approximately 40,000-50,000 Suffolk County residents still get their water from shallow backyard wells' which are highly susceptible to groundwater contamination.

Finally, Long Island has the nation's largest sole source water supply—if it gets contaminated, there are no other alternatives.

Although we have been lucky that few water sources have been so contaminated as to make the water undrinkable, even in small amounts MTBE fouls the water, making it smell bad and taste awful.

But there are potentially grave health impacts as well. In 1993, the EPA indicated that MTBE "supports a hazardous classification of possible human carcinogen." In high concentrations, it can result in damage to the nervous system when inhaled, and harm to kidneys when ingested.

Mostly, MTBE gets into our water supply from leaking underground gas tanks. But MTBE can also find its way into water from car exhaust by getting trapped by rain and seeping into the ground. As a result, a ban is the only way to stop MTBE from fully contaminating our water supplies.

I am proud of how my colleagues in New York State have moved to address this problem. In November 1999, Governor Pataki proposed the strictest ground water

standard in the nation for MTBE (reducing the amount of MTBE permitted in the surface and groundwater from 50 parts per billion to only 10 parts per billion).

Furthermore, earlier this month, the New York State Assembly voted unanimously for a bill to ban MTBE—introduced by a fellow Long Islander, State Assemblyman Thomas DiNapoli (D-Great Neck). The State Senate's version of the bill, introduced by another Long Islander, State Sen. Carl Marcellino (R-Syosset), is ready for a vote soon.

Despite the NY Legislature's intent to ban MTBE, there is concern about whether, in light of the Clean Air Act requirements regarding oxygenates, a State can act alone in banning a particular oxygenate. John Cahill, Commissioner of the New York Department of Environmental Conservation, supports phasing out MTBE, but has repeatedly said he believes that only the federal government can do so.

California Governor Gray Davis has already ordered a phase out of MTBE by 2002. Maine, Alaska, Vermont, CT, NJ, and New Hampshire are all in the process of legislating against MTBE.

To address this situation nationally, I have introduced comprehensive legislation that does the following:

- Bans the use of MTBE by no later than January 1, 2004—the same as the recently passed State Assembly bill.
- Authorizes EPA to declare an emergency if MTBE is present in the water supply and to provide expedited funds to communities to purchase bottled water and to clean up their contaminated water supplies.
- Assists private citizens in hooking up to town water supplies in the event that their water supply is contaminated by MTBE.
- Directs NIH to conduct a study of the long-term health effects of MTBE.
- Makes underground storage tanks that are leaking MTBE the highest priority cleanups for EPA under the Leaking Underground Storage Tank program.
- Makes EPA accelerate the testing and reporting of MTBE in public drinking water.

As a Member of the House Appropriations Committee, I will fight for funding to assist local residents and communities in dealing with this growing problem. I will fight to get the additional funds needed to fix these leaking tanks and prevent additional MTBE contamination.

I am hopeful that this bill will move quickly through the House with bi-partisan support. I look forward to working with my colleagues to see this legislation enacted so that our neighbors in Long Island and around the country can continue to depend upon safe, clean drinking water.

Thank you, Mr. Chairman.

Mr. BILIRAKIS. Thank you, Michael.

Mr. Waxman requested and received unanimous consent to be able to offer any questions to all three of you in writing, and I am sure you are willing to respond to them. Thank you so very much for your patience and for being here today.

Mr. PALLONE. Mr. Chairman, can I ask unanimous consent that the statement of Mr. Dingell be submitted for the record?

Mr. BILIRAKIS. Yes. I have already given that unanimous consent for all members of the subcommittee. By all means.

Mr. BARRETT. Mr. Chairman.

Mr. BILIRAKIS. Yes.

Mr. BARRETT. I would also ask unanimous consent to have submitted into the record the April 6, 1987, I believe, memorandum written by Beth Anderson that I referred to in my opening statement.

Mr. BILIRAKIS. Yes. Without objection, that will be the case.

[The information referred to follows:]



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

PRO-3-2

APR 6 1987

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: Division Director Briefing for Methyl tert-Butyl Ether (MTBE)

FROM: Beth Anderson, Project Manager
Test Rules Development Branch (TS-778)

TO: Addressees

Attached are the briefing materials for the course setting meeting on MTBE. The meeting is scheduled for Monday, April 13, 1987 in Room 103 of NE Mall at 11 am to noon. Please bring the attached information with you at that time.

Attachment

Addressees

Joe Merenda
Gary Timm
Steve Ellis
Susan Vogt
Dave Klauder
Marty Halper
Mike Shapiro
Andy Gordon
Susan Hazen
Margaret Rostker
John D. Harris

Methyl Tert-Butyl Ether (1634-04-4)
Course-Setting Recommendations

- 1) ITC RECOMMENDATIONS: (Recommended with intent-to-designate November 1, 1986)

A. Health Effects:

- 1) Chronic inhalation toxicity including neurotoxic, hematologic, and oncogenetic effects.

B. Chemical Fate:

- 1) Monitoring studies to determine typical concentrations of MTBE in the breathing zone of workers and consumers at sites where MTBE-containing gasoline is being transferred, including gasoline terminals and service stations.

Rationale: The basis for these concerns was: the dramatic increase in MTBE production and use in the past few years. As lead is phased out, MTBE has filled the role of octane enhancer which is added to many gasoline blends. Workers and consumers are exposed to vapor emissions via skin contact and inhalation when transferring MTBE or MTBE-containing gasoline.

2) TRDB RECOMMENDATIONS

A. Finding 4(a)(1)(B)

There was a production capacity of approximately 4 billion pounds for MTBE in 1986. At least two major companies are building new plants to produce MTBE. NIOSH estimates worker exposure at 2,571 workers, but it is unclear during what processes these workers are exposed. There are 189,200 "private" service stations and approximately 300,000 service station attendants, so exposure to MTBE vapor is greater than the NIOSH estimate.

Concern about MTBE in drinking water surfaced after the ITC report was published. Known cases of drinking water contamination have been reported in 4 states. These cases affect individual families as well as towns of up to 20,000 people. It is possible that this problem could rapidly mushroom due to leaking underground storage tanks at service stations. The tendency for MTBE to separate from the gasoline mixture into ground water could lead to wide spread drinking water contamination.

3) BACKGROUND INFORMATION

A. Chemical Description

Methyl tert-butyl ether (or 2-methoxy-2-methyl propane) is a clear liquid with a vapor pressure of 245 mm Hg. The water solubility of MTBE has been estimated at 40,000 to 51,260 mg/L.

The high value of the Henry's law constant, 5.8×10^{-4} , indicates that MTBE will volatilize from water. The estimated half-life of MTBE is 2.5 hours in a stream and 137 days in a 50 m deep lake. The half-life of MTBE in the air is estimated between 3 to 6 days based on the reaction of MTBE with hydroxyl radicals in polluted and normal atmospheres respectively.

B. Manufacturing Process and Use

MTBE is made from isobutylene and methanol in the presence of an acidic ion-exchange resin catalyst in the liquid phase at temperatures between 30-100°C and 7-14 atm. MTBE can be manufactured in either a 1 or 2 stage reactor. Chemical Marketing Reporting estimated that MTBE production will grow 19% per year between 1985 and 1990. MTBE is used almost exclusively as an octane enhancer in unleaded gasoline. Typical MTBE content ranges from 2-8% by volume, although use of up to 11% by volume has been approved by EPA.

Minute quantities of MTBE have been used in an experimental procedure to dissolve gallstones using injection of MTBE through a catheter. MTBE is also used as a solvent in some liquid chromatography procedures.

ISSUES

1) Mode of exposure for health effects testing.

ECAD recommends that the potential hazards due to dermal, oral and inhalation exposure be evaluated. Two 90-day subchronic tests, one by oral route, one by inhalation should be conducted. A pharmacokinetics study relating dermal, oral, and inhalation exposure should also be done. EPA will use the results of this testing to determine the route of exposure for the bioassay and remaining tests.

2) ITC request for monitoring study to determine MTBE vapor concentrations at sites of MTBE-containing gasoline transfer.

ECAD does not recommend a monitoring study for MTBE vapor. ECAD believes that studies of gasoline vapor release can be combined with information on MTBE vapor concentration above MTBE-containing gasoline to estimate consumer exposure to MTBE vapor. Contacts with regional offices have been made to determine if there is regional interest in monitoring information.

3) ECAD recommends adherence to the previous OTS policy of requiring the end points obtained in a two generation reproduction and fertility study. A single generation reproduction/fertility study by inhalation was submitted under TSCA 8(d).

<u>Tests</u>	<u>Maxi-B</u>	<u>Full-B</u>	<u>8(d) Submissions</u>	
			<u>Adequate</u>	<u>Not adequate</u>
<u>Sub chronic</u>		X		X
<u>Oncogenicity</u>	X	X (trigger)		
<u>Developmental Toxicity</u>	X	X	?	
<u>Reproduction and fertility</u>	X	X		X
<u>Gene Mutation</u>	X	X	?	
<u>Chromosomal Aberrations</u>	X	X		
<u>Neurotoxicity</u>	X	X		
<u>Pharmacokinetics</u>	X			X
<u>Dermal Sensitization</u>	X	X		

Mr. BILIRAKIS. Panel No. 2, the Honorable Robert Perciasepe, Assistant Administrator for Air and Radiation, U.S. Environmental Protection Agency; Mr. Mark Mazur, Director of Office of Policy, U.S. Department of Energy; Mr. Dan Greenbaum, President of the Health Effects Institute out of Cambridge, Massachusetts.

Gentlemen, you can see we have a very lengthy program here. I am going to set the clock at 5 minutes, if I may. Obviously, if you go over a minute or 2, no particular problem.

Bob, particularly, you have got an awful lot of things to respond to, so we would afford you as much as I can, the opportunity to do that.

That being the case, obviously your written statements are a part of the record, so we would hope you would complement them and supplement them.

Mr. Perciasepe.

STATEMENTS OF HON. ROBERT PERCIASEPE, ASSISTANT ADMINISTRATOR FOR AIR AND RADIATION, U.S. ENVIRONMENTAL PROTECTION AGENCY; MARK J. MAZUR, DIRECTOR, OFFICE OF POLICY, U.S. DEPARTMENT OF ENERGY; AND DANIEL S. GREENBAUM, PRESIDENT, HEALTH EFFECTS INSTITUTE

Mr. PERCIASEPE. Thank you, Mr. Chairman, and thanks for the indulgence on the time. I will try to stay in the 5 minutes with my

introductory statement, and we can probably get into a lot of issues during the question and answer period.

First of all, I want to thank you once again for inviting EPA to this hearing to talk about the environmental benefits of the Reformulated Gasoline Program, which is the broad subject of the hearing; update the agency's efforts regarding the Blue Ribbon Panel that has been mentioned several times; and to talk a little bit about the status of the California waiver that has already been discussed.

I wanted to emphasize three key points. The RFG Program works and has provided significant air quality benefits to the United States. There are growing concerns, and we have heard many of those concerns as clearly as they can be articulated in the opening comments, about the use of MTBE in the Nation's gasoline. And, third, I want to talk a little bit about how we need to work together to solve this problem. Because the solutions that are available to us are imperfect, and the need for a mix of work that we can do and that authority that you can bequeath upon us is the right way to find the answer to this.

So, notwithstanding the history, although I am sure I will have to deal with that in this hearing, I want to urge us all to think about the fact that we are going to have to solve this problem together; and that is what our intention is.

In 1990—and we have heard this, but let me put a little bit of specific point to it. The Reformulated Gasoline Program is part of a broader clean air program that we have already heard in opening statements that has been successful. Let me talk a little bit about it.

The Reformulated Gasoline Program was introduced in the United States in 1995. I do want to point out that when EPA put that program together in 1995, based on the authority and the specific requirements that Congress put in the Clean Air Act, we did try to increase the use of ethanol in that clean air program, and we lost in court.

Again, I want to point out the imperfect tools we have to deal with with this kind of problem as we are implementing a program to solve one problem with imperfect tools, to look at broader environmental impacts. Over 30 areas are still today not in attainment for the 1-hour ozone standard.

The Reformulated Gasoline Program has been very effective in reducing precursors to smog as well as air toxics. The RFG component of the Clean Air Act requires 2 percent oxygen by weight in the reformulated gasoline.

In the first phase of this program between 1995 and 1999, the goal in the Act was a 17 percent reduction in volatile organic compounds and toxics. We have been doing better than that. We have been averaging about a 27 percent reduction in toxics. And as many members have said in their opening comments, oxygenates have played a role, an important role in diluting other more toxic components of gasoline.

The second phase of the program is being implemented this year. The percentages will move up, as in the Clean Air Act, the 27 percent for VOC, 7 percent for nitrogen oxides, and we continue the

comparable toxics reductions. It is the equivalent of taking 17 million cars off the road.

The RFG program is required by law in 10 metropolitan areas in the United States, the most serious and severe nonattainment areas. It is also been opted in by several areas in the country, most notably most of the Northeast States, Kentucky, Texas, Missouri. And so at this particular moment, including the areas in California there that are using this Federal gasoline, about 30 percent of the Nation's gasoline is this Federal reformulated gasoline.

We have further evidence of the success of the program when we look at the ambient monitoring in these cities the year before and the year after the implementation of the program. We are seeing in the ambient area a 38 percent reduction on average across those 10 areas in benzene. Benzene is an extremely toxic chemical, and it is used in gasoline and has been greatly reduced by the Reformulated Gasoline Program.

The Clean Air Act, I think, as has been pointed out, does not specify which oxygenate to use, and there are numbers of them. But predominantly in the United States, ethanol and MTBE are the ones that are used, with the MTBE being up around 85 to 87 percent.

Despite these air quality gains of the reformulated gasoline program, there continues to be and there is significant concern about contamination of drinking water by MTBE; and it has been pointed out that this potential has been known for over a decade. And not being a time traveller, I can't put my head in what was going on in 1988 in those previous EPA administrations.

But let me just say, you know, hindsight is 20/20. I think everybody did make decisions based on what everyone thought was either a manageable problem or one that the benefits would outweigh the cost. I think what we know today, and as envisioned by the Blue Ribbon Panel that we put together over a year ago, that this is not coming to fruition, that managing this problem for whatever approach we thought was going to work in the early part of this decade is not coming to fruition.

We are very concerned about this widespread detection of MTBE, and the current data indicate that there is a widespread problem at low levels. Just to give you some example, we have been doing some work with the United States Geological Survey. To give you the sense of the relationship between RFG and contamination of MTBE, when you go into areas that are using MTBE in the RFG program, that is methyl tertiary butyl ether, in the reformulated gasoline areas, we find, and the USGS has found in 21 percent of the samples of ambient groundwater, you find a detection of MTBE. And if you go into the nonRFG areas, you only find it 2 percent of the time. So it is clearly a relationship between the RFG program and the level of contamination.

As has also been mentioned, we put a Blue Ribbon Panel together over a year ago to look at all of these issues. We have scientists, health professionals, water utilities, environmental groups, industries, State and local governments, including California, represented on the committee, and they grappled with many of these issues and an assessment to alternatives for the use of MTBE.

But they also wanted to make sure that we continue to maintain the benefits the RFG program has delivered in air quality of the United States, and therein lies one of the major challenges in terms of how we can work together to make sure we don't lose the gains we have made in air quality but at the same time avoid the downside of the potential groundwater contamination.

The panel's recommendations were in several broad areas: Continue to improve leak protection, because under any circumstances, with or without MTBE, gasoline is a toxic and potent mixture of chemicals that we don't want in our groundwater regardless; remediate existing contamination; amend the Clean Air Act to remove the 2 percent oxygenate requirement; maintain the current air quality benefits; reduce the use of MTBE, and they said significantly reduce the use of MTBE; and accelerate research on MTBE and its substitutes.

The panel recommended that MTBE be significantly reduced. The sources of the potential release into the environment are many. It is not just the underground storage tanks. And clean up, once it is released, is difficult, as has already been laid out, due to solubility movement, slow degradation.

We are concerned about this, and we have concluded that a comprehensive approach must be considered that either significantly reduces or eliminates MTBE from the use in the reformulated gasoline program. We believe there are alternatives such as ethanol. But adequate lead time will be necessary.

We have also initiated a number of other activities along the lines of the panel. I will just try to go through them quickly.

We are developing revised drinking water standards. We are developing water quality standards for ambient water. We have increased compliance with the underground storage tank program. We have been funding research with the University of California at Davis to evaluate new ways of leak detection. Because even if we have perfect tanks, there are still going to be leaks. We are also conducting a million dollar remediation technology review also in California. I might also add, in 1998, we initiated a \$15 million research program on all of the different additives to the gasoline.

While we pursue some of these—if I might digress for a minute, Congressman LaHood brought up the issue of carbon monoxide and the National Academy of Sciences. I want to say we do have—we have analyzed that. We do have an interagency process under way looking at the carbon monoxide, benefits of ethanol, and how that relates to the VOC goals of the reformulated gasoline program. We hope to have a proposal and to complete the interagency review process very soon.

But while we pursue these, we still feel this is something we are going to have work on together, and Congress needs to address some of these issues with us.

Finally, let me say something very quickly about the California situation; and I will try to be as straightforward as I can. And I am sure you will have more questions.

As I mentioned in our testimony last year, this is the first time anybody has tried to request the utilization of this part of the Clean Air Act where we have to determine that using oxygenates actually interferes with the attainment of a national ambient air

quality standard. It isn't whether you are using the oxygenates or a certain kind of oxygenate actually causing a problem in the groundwater. We don't have the authority to do that. But we do have the authority to say using these oxygenates could interfere with air quality.

I think you have heard testimony even amongst the opening statements that the oxygenates have helped air quality. So trying to prove that it doesn't help air quality we have never done before. In fact, our analysis and California's analysis still do not coincide with each other. In fact, we were trying to do this with California during the same time they were actually changing their fuel, which they finally did in December of last year.

So they changed their fuel. They changed their predictive models on how they predict the reaction to their fuel and their motor vehicle fleet. And we are now in the process of verifying their model changes, which are different than our models.

You might imagine, you can't go around and check the emissions from millions and millions of cars. You have to model and do the best you can with those analytical tools. We have to determine, if you changed the formula of gasoline, the recipe, what happens coming out of the tail pipe? And then, as that change is coming out of the tail pipe, is that really affecting the attainment of a national ambient air policy?

Mr. BILIRAKIS. Bob, you are already close to 12 minutes. But I also don't want to not give you the opportunity because you did hear an awful lot of comments up here, and I am trying to be as fair as I can.

Mr. PERCIASEPE. I will complete right now by simply saying, as what you have already determined from what I started to say about the California waiver, and we can probably talk from a couple questions in more detail about it, it is not easy. We want to do it in a legally defensible way. The administrators talked to the Governor about this. I am in constant contact with the State environmental agencies.

It won't do any use to anybody for us to make a decision on incomplete information or incomplete analysis that just gets shot down in the courts. Certainty is what is going to be needed for those refiners, and we need to do this the right way.

Finally, let me just say in summary, it is clear that we need to change the reformulated gasoline program. We are here today telling you that we agree with that, and we want to work with you to do it. You may not have the full confidence, Mr. Chairman, and I really am sorry about that, that I am sincere in telling you that. But we can't do it alone. We don't have the legal authority or the tools to do what needs to be done alone. We are going to have to find a common ground between what we can do and what you need to help us do in legislation to get this done.

We used to come here and say, no legislation. Don't touch the Clean Air Act. We are not saying that anymore. We want to work with the members who are trying to move legislation forward. We think it needs to be done. The real solution will be a mix of something we do and something you do, and I think we can do it this year, and I think we need to do it this year. So I will stop there, and I really appreciate your indulgence.

[The prepared statement of Hon. Robert Perciasepe follows:]

PREPARED STATEMENT OF ROBERT PERCIASEPE, ASSISTANT ADMINISTRATOR, OFFICE
OF AIR & RADIATION, U.S. ENVIRONMENTAL PROTECTION AGENCY

Thank you, Mr. Chairman and Members of the Subcommittee, for the invitation to appear here today. I am pleased to have this opportunity to share information with the Subcommittee on the environmental benefits of the reformulated gasoline or RFG program, to provide an update regarding the Agency's efforts to move forward on the recommendations of the Blue Ribbon Panel and future steps that should be taken to address issues regarding the use of oxygenates in the program. In addition, I would like to take a few moments to discuss the status of the request by the state of California for a waiver of the statutory oxygen content requirement.

My testimony today will stress the following: first, the RFG program works and has provided significant air quality improvements, second, growing concerns about MTBE need to be addressed, and third, Congress must act.

An understanding of the history of the federal RFG program is important in order to put the issues surrounding the use of the oxygenates methyl tertiary butyl ether (MTBE) and ethanol in perspective. As you know, the Clean Air Act Amendments of 1990 put in place a number of programs to achieve cleaner motor vehicles and cleaner fuels. Over all, these programs have been highly successful. Congress struck the balance between vehicle and fuel emissions control programs after extensive deliberation. The RFG requirements also emerged as a program designed to serve Congressional goals, including air quality improvement, enhanced energy security by extending the gasoline supply through the use of oxygenates, and encouraging the use of renewable energy sources.

The federal reformulated gasoline program introduced cleaner gasoline in January 1995 primarily to help reduce ozone or smog levels. Unhealthy smog levels are still of significant concern in this country, with over 30 areas still in nonattainment of the current 1-hour ozone standard, and more areas are expected to exceed the new, 8-hour ozone standard, should it take effect.

Ozone has been linked to a number of health effects concerns. Repeated exposures may increase susceptibility to respiratory infection, cause lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other health effects attributed to smog exposures include significant decreases in lung function and increased respiratory symptoms such as chest pain and coughing.

RFG is an effective way to reduce smog precursors such as volatile organic compounds (VOCs) and oxides of nitrogen (NO_x). The Clean Air Act Amendments of 1990 required that RFG contain 2.0 percent minimum oxygen content by weight. The first phase of the RFG program, from 1995 through 1999, required average reductions of smog-forming volatile organic compounds and toxics of 17% each, and NO_x by 1.5%. Phase I RFG, on average, exceeded these requirements for VOC, NO_x and toxics reductions. Most notably, overall toxics reductions were about 27% versus a 17% requirement. This year, the second phase of the RFG program will achieve even greater average benefits: a 27% reduction in VOCs, 7% reduction in oxides of nitrogen emissions and a comparable toxics reduction. These reductions for RFG are equivalent to taking more than 16 million vehicles off the road. States rely on the air quality benefits of the RFG program to demonstrate in their State Implementation Plans (SIPs) that they can achieve the ozone standard. In fact, seventeen states and the District of Columbia currently rely on reduction credits from the RFG program in their attainment SIPs.

The federal RFG program is required in ten metropolitan areas which have the most serious smog pollution levels. Although not required to participate, some areas in the Northeast, in Kentucky, Texas and Missouri have elected to join, or "opt-in" to the RFG program as a cost-effective measure to help combat their air pollution problems. At this time, approximately 30% of this country's gasoline consumption is cleaner-burning reformulated gasoline.

Ambient monitoring data from the first year of the RFG program (1995) also showed strong signs that RFG is working. RFG areas showed significant decreases in vehicle-related VOC concentrations. One of the air toxics controlled by RFG is benzene, a known human carcinogen. The benzene level at air monitors showed the most dramatic declines with a median reduction of 38% from the previous year.

Neither the Clean Air Act nor EPA requires the use of specific oxygenates in RFG. The statute and, subsequently, EPA's regulations only specify the oxygen content by weight; they do not specify which oxygenate to use. Both ethanol and MTBE are used in the current RFG program, with fuel providers choosing to use MTBE in about 87 percent of the RFG mainly because of cost and ease of transport reasons.

Despite the air quality aspects of oxygenates in RFG, there is significant concern about contamination of drinking water by MTBE in many areas of the country including California, and Maine. EPA is very concerned about the widespread detection of MTBE in drinking water. Current data on MTBE levels in ground and surface waters indicate widespread and numerous detections of MTBE at low levels. The United States Geological Survey has found that the occurrence of MTBE in groundwater is strongly related to its use as a fuel additive in an area, finding detections at low levels of MTBE in 21% of ambient groundwater tested in areas where MTBE is used in RFG compared to 2% of ambient groundwater in areas using conventional gasoline.

In response to concerns associated with the use of oxygenates in gasoline, the Administrator established a blue ribbon panel of leading experts from public health and scientific communities, water utilities, environmental groups, industry, and local and state government, including California, to assess issues posed by the use of oxygenates in gasoline in California and the rest of the nation. The panel held monthly meetings beginning in January 1999, and presented its recommendations to the Clean Air Act Advisory Committee in July. This panel grappled with a number of complex issues, including an assessment of alternatives to the use of MTBE to ensure that current air quality benefits of RFG are continued and the additional benefits of the second phase of the program are not endangered.

The panel's recommendations to the Administrator fall under the following broad categories:

- Prevent leaks through improvement of existing programs
- Remediate existing contamination
- Amend the Clean Air Act to remove the requirement that federal reformulated gas contain 2% oxygen (by weight)
- Maintain current air benefits (no environmental backsliding)
- Reduce the use of MTBE
- Accelerate research on MTBE and its substitutes

The panel recommended that MTBE be significantly reduced. Given the numerous and diverse sources of potential release into the environment and the problems associated with cleaning it up once it is released (due to solubility, rapid movement, and very slow degradation), EPA is very concerned that MTBE presents a significant risk to the nation's drinking water supply. Consequently, EPA believes that a comprehensive approach must include consideration of either reducing or eliminating the use of MTBE as a gasoline additive in an expeditious and practicable time frame. We believe there are alternatives, such as ethanol, but adequate lead time is necessary.

EPA has initiated a number of actions in response to the panel's recommendations. This will include developing a drinking water standard under the Safe Drinking Water Act and establishing a water quality standard under the Clean Water Act, and enhancing underground storage tank program compliance to a 90% level in 2000. The Agency is currently funding a grant with the University of California-Davis to evaluate the effectiveness of leak detection technologies. EPA is also conducting a \$1 million technology demonstration project for the clean up of MTBE contaminated aquifers. In addition, where possible, we will work to provide more flexibility to states and refiners as they move to decrease the use of MTBE in gasoline. For example, a proposed rulemaking that will account for the impact on ozone formation from CO emission reductions associated with ethanol use would provide flexibility.

While we will pursue administrative remedies under our various authorities to achieve this goal, we believe Congress needs to address the complex set of issues surrounding the use of oxygenates in gasoline through national legislation.

Finally, Mr. Chairman, I want to discuss the status of the state of California's request for a waiver from the reformulated gasoline (RFG) program's oxygen requirement. Before I discuss details of the California waiver, I will note that this request marks the first time in the history of the RFG program that a state has made such a waiver request. In addition, while requesting a fuel waiver, California was in the process of changing their fuel regulations which was completed in December 1999. In March last year, Governor Davis announced his intention to phase out the use of MTBE in California. A month later, California sent a letter requesting a waiver under Section 211 (k)(2)(B). As you know, under the Clean Air Act, EPA may waive the oxygen mandate, in whole or in part, "... upon a determination by the Administrator that compliance with such requirement would prevent or interfere with the attainment by the area of a national primary ambient air quality standard [NAAQS]." This initial letter did not contain the technical analysis to demonstrate how the oxygen requirement might actually prevent or interfere with the attainment of the NAAQS in California. In the course of the process, CARB has not only

changed their fuel but modified the modeling assumptions surrounding the program. EPA and CARB have worked cooperatively to complete the submission. This process was completed on February 9, 2000, when California submitted all the needed information necessary for EPA to begin its comprehensive review.

In order to act on the California request, the Agency must conduct an independent evaluation of the data and modeling, as well as the other information submitted by the state in support of its request for a waiver from the federal RFG oxygen requirement. This is not a simple task. It will require a review of the detailed modeling assumptions associated with the waiver request. We hope to complete our assessment by early summer. Based on our productive discussions with the California Air Resources Board up to this point, we fully expect that we will meet this schedule.

If the statutory conditions to grant the waiver are met, EPA would be required to provide public notice of our decision. Such procedures include a comment period of at least thirty days.

Mr. Chairman, in closing, we will move forward to thoroughly review California's waiver request and arrive at a timely decision concerning this vital matter. We are committed to working with the Congress, as well as the States and the regulated community to address the Blue Ribbon Panel's recommendations to the Administrator. We also are committed to working with Congress to provide a targeted legislative solution that maintains our air quality gains and allows for the reduction of MTBE, while preserving the important role of renewable fuels like ethanol.

This concludes my prepared statement. I would be happy to answer any questions that you may have.

Mr. BILIRAKIS. Bob, I have to be part of a veterans' Medicare subvention meeting at 1 o'clock over in the Capitol, and it is imperative that I leave. Mr. Greenwood is going to take over.

But I would just very quickly say that I am not aware of any suggestions, any recommendations in changes in the Clean Air Act and in giving you the flexibility you feel you may need and that sort of thing. That has not been forthcoming. So we want to work together. We want to work together. We want to work together. We want to work together. But we don't see anything coming from EPA in that regard.

I would just merely ask you one question, with leave of the rest of the committee. On February 16, Chairman Bliley and I wrote you a letter regarding documents requested. Your February 29 letter to us indicated we can expect you to fully comply with that within several days. What is the date?

Mr. PERCIASEPE. It will either be Tuesday or Wednesday.

Mr. BILIRAKIS. All right.

Mr. PERCIASEPE. The lawyers have just gone through to mark things, which ones are delivered or not. We are not going to take anything back. We are going to deliver it to you Tuesday or Wednesday.

Mr. BILIRAKIS. Good.

Mr. PERCIASEPE. If anything changes on that, I will call your staff and tell them personally.

Mr. BILIRAKIS. Please, don't let them change.

Mr. PERCIASEPE. As far as I know, that is the schedule.

Mr. BILIRAKIS. I have given you flexibility, but not that much.

Mr. BILIRAKIS. Dr. Mazur, please proceed. I am sorry, sir. I appreciate your patience, you and Mr. Greenbaum.

STATEMENT OF MARK J. MAZUR

Mr. MAZUR. Mr. Chairman and members of the subcommittee, thank you for inviting the Department of Energy to be here today to give this testimony on the Federal reformulated gasoline pro-

gram. We are going to focus on gasoline markets and the role of oxygenates like methyl tertiary butyl ether.

Mr. BILIRAKIS. I am not sure that you are speaking into the mike. Is that on, sir? I can barely hear you.

Mr. MAZUR. I will use the one that works.

We want to focus our testimony today on the Federal reformulated gasoline program, gasoline markets, and the role of oxygenates, like MTBE and ethanol, in this program and gasoline supply more generally. Basically, that is what we figure our expertise is in this matter.

Over the last decade, DOE has worked with our colleagues at the Environmental Protection Agency to develop and implement the RFG program and subsequent clean fuel rulemakings, including most recently the tier 2 low sulfur gasoline program.

The Department has done detailed analyses of the costs and refinery operational impacts of the various product quality regulations as well as looking at broader fuel supply and pricing issues.

More specific to this hearing, we spent considerable time over the past year working with EPA and the Blue Ribbon Panel on oxygenates to examine possible consequences of restricting the use of MTBE and modifying oxygenate requirements for the RFG program.

As you have heard several times today, the reformulated gasoline program has been an air quality success with very few negative impacts on gasoline markets. There are adequate supplies of RFG, and the price is only slightly higher than conventional gasoline.

One very important reason for this is the fungible nature of the gasoline used in this program, which allows gasolines produced at different refineries to go to different States and to be mixed and exchanged.

Our analysis indicates that the current level of oxygenate use is not far from the level that refiners would choose to use even if there was not a specific oxygenate mandate. This is largely because oxygenates like MTBE and ethanol are valuable blendstocks for producing clean, high- performing gasolines.

The availability of these oxygenates provides valuable gasoline blending flexibilities to refiners who are trying to meet tight product specifications. The oxygenates are aromatic-free, high octane, virtually sulfur-free blendstocks. They can be put in almost any shipment of gasoline to offset the performance shortfalls in other parts of the refinery.

The effect of being able to readily blend even small amounts of MTBE into gasoline is to help assure product deliverability, reliable supplies, and affordable gasoline prices to consumers.

We share the concerns expressed by many over the impact of MTBE and water quality. Reducing or eliminating the use of specific oxygenates like MTBE to help protect water may be necessary but should be phased in over a period of time to minimize the impacts on gasoline production, gasoline supplies, and, most importantly, gasoline prices to consumers.

Predicting the impacts of an MTBE phase-down or phase-out of gasoline supplies and market operations is difficult. Completely phasing out the use of MTBE in gasoline would be the equivalent

to closing four or five refineries in the distribution system in terms of the volumes that we need to be made up elsewhere.

Given enough time, the fuel industry can respond to the possible loss of MTBE. Clearly, increased use of ethanol would play a role, and there would be other steps taken by the industry as well.

We don't know what the right answer is at this point. We are willing to work with EPA, Congress, States, and the fuel supply industry to develop an approach that fully addresses water quality problems and still ensures adequate supplies of gasoline at affordable prices.

Thank you for the opportunity to present this testimony. I would be glad to answer any questions you might have.

[The prepared statement of Mark J. Mazur follows:]

PREPARED STATEMENT OF MARK J. MAZUR, DIRECTOR, OFFICE OF POLICY, U.S.
DEPARTMENT OF ENERGY

Mr. Chairman, members of the Subcommittee, I am pleased to be here and give this testimony on the Federal reformulated gasoline program, gasoline markets, and the role oxygenates like methyl tertiary butyl ether (MTBE) and ethanol, play in this program and in gasoline supply more generally.

Over the last decade DOE has assisted the Environmental Protection Agency (EPA) in the developing and implementing the RFG program and subsequent clean fuel rulemakings including, most recently, the Tier II low sulfur gasoline program. The Department has done detailed analyses of the costs and refinery operational impacts of the various product quality regulations as well as broader fuel supply and pricing issues. More specific to this hearing, we have spent considerable time over the last year working with EPA and the Blue Ribbon Panel on Oxygenates examining the possible consequences of restricting the use of MTBE and modifying the oxygenate requirements for the RFG program.

In addition to these specific, focused analyses, the Department has the lead within the Administration for gathering and disseminating energy markets data, as well as producing analysis and forecasts of energy markets through our Energy Information Administration. As you are well aware, Secretary Richardson and the rest of the Department, particularly the Energy Information Administration and the Office of Policy, have been intensely involved in trying to help states, consumers and fuel suppliers respond to the problems caused by the heating oil and diesel fuel price spikes recently experienced in the Northeast. We are, at the same time, paying careful attention to the gasoline market and are concerned, as was explained in testimony by EIA last week, that we could experience very tight gasoline supplies this year.

In addition to the work we do within the Department and the comments and analyses we have provided to EPA, we have asked the National Petroleum Council (NPC), a federal advisory committee to the Secretary of Energy, to examine various issues related to environmental regulations and petroleum product markets. For example, in 1991, we asked the NPC to look at the impacts of environmental regulations on the refining industry with specific attention to the RFG program that was still being developed at that time. In 1997, the NPC examined the role that crude oil and petroleum product inventories play in the supply system and in affecting price volatility. The NPC is now finishing a third study in this area which addresses the cumulative impacts of several product quality regulations, including changing the role of oxygenates in reformulated gasoline, on refinery viability and product deliverability.

This brings me to the subject of this hearing which is the operation of the RFG program, the role of oxygenates in RFG production, and the potential impact on gasoline markets of limitations on MTBE use. The reformulated gasoline program has been an air quality success with very few negative impacts on gasoline markets. Phase I of the program started in 1995 and provided important reductions in VOC and toxic emissions. Phase II is underway now with the crucial start of production of summer, ozone-control season gasoline (with lower VOC and NOx emission potential) beginning later this month at refineries around the country. Phase II gasoline will be lower in sulfur and have a lower vapor pressure, providing additional VOC reductions and significant NOx reductions. Toxic emissions are required to be lower but most of the Phase I gasoline already met the Phase II toxic performance standards.

This program also has been a market success for consumers in that there were adequate supplies of RFG and its price was only slightly higher than conventional gasoline. There are several reasons for this. These include the relatively small fraction of gasoline production represented by RFG (about 25% of the total outside California) and the large number of refineries (about half of east coast, gulf coast and mid-west refineries) and importers participating in the production of RFG. Another very important reason is the fungible nature of the gasoline, which allows the gasolines produced at the different refineries and going to different states to be mixed and exchanged. Finally, refiners have significant flexibility to formulate the gasoline in many different ways to match their refining capacity. While the mandate to use certain amounts of oxygenate in RFG has been controversial, refiners have adapted to this and integrated that oxygenate use into the economic production of their total gasoline pool.

Our analysis, and that of others, indicates that the current level of oxygenate use is not far from the level of use that refiners would choose, at today's gasoline and oxygenate prices, even if there were no specific oxygenate mandate. This is largely because oxygenates like MTBE and ethanol are valuable blendstocks for producing clean, high performing gasolines. Under these circumstances, simply removing the oxygenate mandate would have little effect on oxygenate use other than allow some additional flexibility in where, within a refiner's total gasoline pool, these oxygenates are used.

As refiners face additional requirements to meet even tighter environmental standards for their gasoline, like the recently promulgated standards for Tier II low sulfur gasoline or possible additional toxic emission control requirements for conventional gasoline, they will find oxygenates such as MTBE even more necessary and valuable to make up for lost volume, octane and other property changes. The availability of oxygenates also provides valuable immediate gasoline blending flexibility to refiners trying to meet tight product specifications; the oxygenates are aromatic-free, high octane, virtually sulfur-free blendstocks that can be put in almost any shipment of gasoline to offset performance shortfalls in other parts of the refinery. This is particularly true for MTBE which can be blended at the refinery, shipped in pipelines and which has little negative impact on vapor pressure. The effect of being able to readily blend even small amounts of MTBE into gasoline is to help assure product deliverability, reliable supplies and affordable gasoline prices to consumers.

We share the concerns expressed by many over the impact of MTBE on water quality. Reducing or eliminating the use of specific oxygenates like MTBE, to help protect water may prove to be necessary but will need to be phased in over a period of time to minimize impacts on gasoline production, gasoline supplies and prices. While the estimates vary somewhat, we believe there is general agreement that the refining industry outside California will have to spend \$1 to \$2 billion in capital investments to continue producing acceptable quality gasoline at the same volumes if MTBE use is eliminated. This is in addition to the more than \$1 billion estimated capital investments required in California refineries to make gasoline without MTBE. The capital investments vary little whether or not the oxygenate mandate for RFG is eliminated because of the need to replace MTBE's volume, octane, and other valuable properties. Recovering this investment will add to the cost of gasoline, as will various operating costs including the need for additional crude oil to replace the lost gasoline volume and the purchase of other oxygenates like ethanol. Overall federal reformulated gasoline production cost increases could be three to four cents per gallon over the long term, with the lower end of the range reflecting the costs without the oxygenate mandate. As I mentioned earlier, the Department has done extensive analysis of these refinery impacts and gasoline costs changes through our Oak Ridge National Laboratory, and I would like to submit this information for the record.

Predicting the impacts of a MTBE phase-down, or phase-out, on gasoline supplies and on market operation is more difficult. Phasing MTBE out of gasoline is equivalent in its impact on gasoline supplies to losing, over whatever the phase-out period is, some 400,000 barrels a day of gasoline production capacity or to closing four to five large refineries. A phase-out that ultimately leads to a ban on MTBE may also affect the ability of the US gasoline market to draw gasoline supplies from Europe, the major source of our price-sensitive gasoline imports, since those refiners count on the use of MTBE to some degree as well.

State-by-state restrictions on MTBE could have essentially the same volume impacts as a national ban if refiners were forced to take MTBE out of all gasoline to protect the fungibility of the gasoline distribution system. Alternatively, gasolines with and without MTBE could continue to be produced but with less flexibility and exchange opportunities in the distribution system. If there were a regional refinery

or distribution supply problems, this could easily lead to regional gasoline shortfalls and longer periods of price volatility as markets struggle to re-balance on a state-by-state basis, rather than a national basis.

Given enough time, the fuel supply industry can respond to the possible loss of MTBE. Clearly, increased use of ethanol will play an important role. However, what is not so clear is the speed and degree to which refiners can or will make up the loss in volume and quality of gasoline given all the other demands for improved environmental quality of gasoline and diesel fuel, the uncertain market conditions, and the continuing growing demand for all petroleum products.

Resolving the role of all oxygenates in gasoline will be important to the refinery planning and construction process that is starting to take place as refiners prepare for the Tier II low sulfur gasoline program, potential new gasoline toxic control requirements and other fuel quality changes for diesel fuel. However, if MTBE must be reduced or eliminated in the same time frame, refiners will be faced with additional demands for capital and engineering resources that they may not be capable of meeting. The outcome of this could be a significant further tightening of gasoline supplies, price increases and price volatility that are not predicted in the cost analyses we and others have done.

Obviously, the serious problem of MTBE contamination of water supplies must be addressed. Short of eliminating MTBE from gasoline, there may be other options for dealing with this issue. In addition to doing our best to reduce the leaking of gasoline from underground storage tanks, the primary source of MTBE reaching water supplies, and the spilling of gasoline containing MTBE, reducing the amount of MTBE allowed in any given gallon of gasoline (i.e. its allowable concentration) and increasing the flexibility of the oxygenate requirement in RFG are possible approaches for mitigating the problem, particularly in the short term. Our examination of these options, included in the refinery analyses performed by our Oak Ridge National Laboratory that I am submitting for the record, indicates that the cost and potential market impacts of a phase-down in allowable level of MTBE would be significantly less, about half the per gallon cost, than a phase-out of MTBE from the entire national gasoline pool. We do not know what the right answer is at this point but we are prepared to work with EPA, Congress, the States, and the fuel supply industry to develop an approach that fully addresses the water quality problems and still assures adequate supplies of gasoline at reasonable prices.

Thank you for the opportunity to present this testimony. I will be glad to answer any questions you may have.

Mr. GREENWOOD [presiding]. Thank you.

Mr. Greenbaum.

STATEMENT OF DANIEL S. GREENBAUM

Mr. GREENBAUM. Thank you. This microphone is working. Thank you, Mr. Chairman and members of the subcommittee.

For the record, I am Dan Greenbaum. I come before you today both as the Chair of the Blue Ribbon Panel as well as someone who has nearly 10 years of experience with the RFG Program, first as the Commissioner of Environmental Protection in Massachusetts, where I "opted" the entire State into using the RFG program, and then more recently in 1996 as president of an independent research institute that reviewed the health effects of both MTBE and ethanol.

I would like to start by highlighting four points.

First, to echo what many have said already, that the RFG program has been an air quality success.

Second, to note that the availability of cost-effective oxygenates such as MTBE played a role in the early air quality success of the program. However, there are now alternative formulations using both ethanol as well as other components of crude oil that do not rely on MTBE and that can maintain the air benefits and relatively low cost of the program so long as there is adequate lead time to implement changes and assurance of no backsliding in air quality.

Third, as many have noted, there have been—and this is documented in our report—growing detections of MTBE in drinking water, with MTBE detected in between 5 and 10 percent of both public and private drinking water supplies in RFG areas. The great majority of these detections, fortunately, have been below levels of public health concern. However, approximately 1 percent have risen to levels above 20 parts per billion and in some rare instances levels are above 100 parts per billion. Detections at lower levels have raised significant consumer taste and odor concerns that have caused water suppliers to stop using some water supplies and incur costs of treatment and remediation.

Fourth, the major source we found of groundwater contamination appears to be releases from underground gasoline storage systems. As you know, these systems have been upgraded over the last decade in response to rules adopted by EPA in 1998, and that has resulted in reduced risks. However, as of last year, approximately 20 percent of those storage systems had not yet been upgraded, and there continue as well to be reports of releases in some upgraded systems.

The other major sources of contamination appear to be small and large gasoline spills and recreational water craft.

This issue of detection of MTBE in drinking water was why the panel was formed in the first place. That panel consisted of experts on air and water quality, as well as representatives of the oil, ethanol, and the MTBE industries and the environmental community.

Based on our investigation, six meetings held in 6 months in a variety of parts of the country, the panel recommended that both U.S. EPA as well as Congress working with the States implement a four-part integrated package of reforms to ensure that water supplies are better protected while the benefits of RFG are maintained.

Specifically, one, the panel recommended a comprehensive set of improvements to the Nation's water protection programs.

Two, the panel agreed broadly that 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.

Three, the panel recommended that Congress remove the current Clean Air Act requirement that 2 percent of RFG by weight consist of oxygen, to ensure that adequate fuel supplies can be blended in a cost-effective manner while reducing the use of MTBE.

Fourth, and finally, the panel recommended that EPA and Congress seek mechanisms to ensure that there is no loss of current air quality benefits as the use of MTBE declines.

We also called for accelerated research into all compounds whose use would likely increase as replacements for MTBE, including ethanol, aromatics, and alkylates. A copy of the report is available at the panel's homepage on the Internet.

Although we agreed broadly on our recommendations, two members, while agreeing with most of them, had concerns with specific provisions, and their statements are also included in the panel's report.

In sum, the panel found that we have a successful cleaner-burning gasoline program, but we need to take action today to ensure that the detections of MTBE in drinking water that we have seen, and which fortunately in the great majority of cases have not yet been of public health concerns, do not continue to grow.

Thank you for this opportunity. I would be glad to answer questions.

[The prepared statement of Daniel S. Greenbaum follows:]

PREPARED STATEMENT OF DANIEL S. GREENBAUM, PRESIDENT, HEALTH EFFECTS INSTITUTE AND CHAIR, BLUE RIBBON PANEL ON OXYGENATES IN GASOLINE

Mr. Chairman, and members of the Subcommittee, thank you for the opportunity to appear before you today. For the record, my name is Daniel Greenbaum and my comments today are based on nearly a decade's experience with the RFG program: first, as Commissioner of Environmental Protection in Massachusetts in the early 1990's where I "opted" the state into RFG; second as President of HEI—an independent institute that reviewed the health effects of both MTBE and ethanol in 1996, and finally and most recently as Chair of the Blue Ribbon Panel on Oxygenates in Gasoline, whose recommendations were published last July.

I would like to highlight four points:

1. The RFG program has been an air quality success. It has provided substantial reductions in the emissions of a number of air pollutants from motor vehicles, most notably volatile organic compounds (precursors of ozone), carbon monoxide, and mobile-source air toxics (such as benzene, 1,3-butadiene, and others), in most cases resulting in emissions reductions that exceed those required by law;
2. The availability of cost-effective oxygenates such as MTBE (Methyl Tertiary Butyl Ether) likely played a role in the early air quality success of the program. However, there appear now to be alternative formulations, that do not rely on MTBE, that can maintain the air quality benefits and relatively low cost of the program, so long as there is adequate lead time, and assurance of no backsliding in air quality.
3. There have been growing detections of MTBE in drinking water, with MTBE detected in between 5% and 10% of both public and private drinking water supplies in RFG areas. The great majority of these detections have been below levels of public health concern, with approximately one percent rising to levels above 20 ppb and some rare instances of levels above 100ppb. Detections at lower levels have raised consumer taste and odor concerns that have caused water suppliers to stop using some water supplies and to incur costs of treatment and remediation.
4. The major source of groundwater contamination appears to be releases from underground gasoline storage systems (UST). These systems have been upgraded over the last decade, likely resulting in reduced risk of leaks. However, as of last year approximately 20% of the storage systems had not yet been upgraded. There continue, as well, to be reports of releases from some upgraded systems. The other major sources of water contamination appear to be small and large gasoline spills and recreational water craft.

This detection of MTBE in drinking water supplies led to the formation of the Blue Ribbon Panel. The Panel consisted of experts on air and water quality, as well as representatives of the oil, ethanol, and MTBE industries, and the environmental community.

We began our work in January, 1999, and conducted an in-depth investigation of the air quality, water quality, fuel supply, and price issues surrounding the use of oxygenates in gasoline, holding six meetings in six months in Washington, New England, and California, hearing from experts, and reviewing dozens of existing and new studies of oxygenates in gasoline.

Based on its investigation, the Panel recommended that U.S. EPA work with Congress and the states to implement a 4-part *integrated* package of reforms to ensure that water supplies are better protected while the substantial reductions in air pollution that have resulted from RFG are maintained. Specifically,:

- *the Panel recommended a comprehensive set of improvements to the nation's water protection programs*, including over 20 specific actions to enhance Underground Storage Tank, Safe Drinking Water, and private well protection programs. The panel considered these necessary, but not sufficient in and of themselves, to prevent future water contamination.

- *the Panel agreed broadly that 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;*
- *the Panel recommended that Congress act to remove the current Clean Air Act requirement that 2% of RFG, by weight, consist of oxygen, to ensure that adequate fuel supplies can be blended in a cost-effective manner while reducing usage of MTBE; and*
- *the Panel recommended that EPA seek mechanisms to ensure that there is no loss of current air quality benefits as the use of MTBE declines.*

The Panel also called for accelerated research into all compounds whose use would likely increase as replacements for MTBE, including aromatics, alkylates, and ethanol. A copy of the full report of the Panel, including the Executive Summary and Recommendations which were issued on July 27, 1999, is available at the Panel's Home Page on the Internet: <http://www.epa.gov/oms/consumer/fuels/oxypanel/blueribb.htm>

Although the Panel agreed broadly on its recommendations, two members, while agreeing with most recommendations, had concerns with specific provisions. Their statements are included in the Panel's report.

In sum, the Panel found that we have a successful cleaner-burning gasoline program but need to take action to ensure that the detections of MTBE in drinking water that we have seen—and which fortunately in the great majority of cases have not been of public health concern—do not continue to grow.

Thank you again for this opportunity to testify. I would be pleased to answer any of the Committee's questions.

Mr. GREENWOOD. I thank all three panelists for their testimony, and the Chair will recognize himself for 5 minutes for inquiry.

I would like to direct my first question to Mr. Perciasepe.

Reading from your testimony on page 5, you list the panel's recommendations, and one of them is very straightforward. It says, "Amend the Clean Air Act to remove the requirement that Federal reformulated gas contain 2 percent oxygen (by weight)."

The same page, you say, "EPA believes that a comprehensive approach must include consideration of either reducing or eliminating the use of MTBE as a gasoline additive in an expeditious and practical timeframe."

At the end of your testimony, you said, "We also are committed to working with Congress to provide a targeted legislative solution that maintains our air quality gains and allows for the reduction of MTBE, while preserving the important role of renewable fuels like ethanol."

So I think it is time to get right down to it. The question I have for you is: Does EPA agree that the Clean Air Act should be amended to remove the reform requirement that the Federal reformulated gasoline contain 2 percent oxygenate?

Mr. PERCIASEPE. This issue is being looked at across the administration. The issue that the Chairman brought up and that you are asking now is, do we have specific administration recommendations to the Congress on this? And I am going to take that—take the Chairman's request back to the administration, and we will work on that.

But let me just say, the administrator, in receiving the Blue Ribbon Panel's report, said that EPA embraces these recommendations.

Now, I would add on the—I believe on the same page, and I can't—I have asked the chairman over here, but I can't remember for sure, but on the same page, I think, of that report, or in some section of the report, it talked about the other policy goals that

Congress had that are in the legislative record in 1990 in establishing the 2 percent oxygenate requirement.

So you hit on a very sensitive—it is going to be sensitive for us and sensitive for you—parameter of solving this problem.

How do you provide more flexibility for refiners to deal with this MTBE issue and, at the same time, meet the other objectives, both air quality, and I might add, when the debate took place in 1990, agricultural policy and energy policy in terms of the volume of the Nation's fuel and where does it come from? And they were specifically talking about renewable fuel.

So I believe that in the Blue Ribbon Panel's report, when the panel acted on that recommendation, it added a statement that when Congress considers removing the 2 percent oxygenate requirement that the panel expects that Congress will also want to consider those other policy objectives it had in establishing that requirement.

Now, that being said, a practical person without any administration position to carry in a briefcase here today would be, you know, the obvious; and that is, the 2 percent oxygenate requirement can be, and as my colleagues in California and the member from California will point out, somewhat constraining in terms of solving the MTBE, not impossible, but somewhat constraining.

The flexibility provided by removing the oxygenate requirement perhaps could make the MTBE reduction go more quickly, but then you run the risk of losing perhaps other objectives Congress had when they enacted the 2 percent option.

Mr. GREENWOOD. I think it goes without saying that whatever we consider legislatively here will have a no-rollback provision. So the assumption going in, I think, on the part of every member in this panel is there is no rollback in air quality. But we do have to fish or cut bait here. We do have to decide to get rid of the 2 percent or not.

Let me ask you another question—my time is running out—and that is: What are your assumptions about what would be most likely substituted for MTBE? Do you agree with the assumption that ethanol is not going to work in every geographic location in the country for issues of transport and volatility? And what are the most likely substitutes? And in 10 seconds, what are their potential unintended consequences environmentally?

Mr. PERCIASEPE. Okay. Very quickly, removing the 2 percent oxygenate requirement will provide more flexibility for all of us to solve the problem, but it will not answer all the other issues that have to be brought to bear, both politically and substantively, to solve this problem. I will leave the political to all of you.

Now, the substantive side is that oxygenates of some kind or another are always going to be needed in gasoline. They are good for octane. They dilute the aromatics which are the toxic emitters, things like benzene. And we won't be able to achieve the same if we have a no rollbacks on toxics and things like distillation characteristics of gasoline which relate to driveability of the car. All of these are going to require some oxygenates.

So the matter, then, of just removing the oxygenate standard won't necessarily solve the bigger problem we have here, because there is going to be a need to meet some of these other parameters.

So things that are likely to replace MTBE, if you couple the increased flexibility in making reformulated gas with the requirement to maintain all these same benefits, things that are likely to replace it would be ethanol, and it could be other components.

There may be some aromatics that could be increased, depending on how the constraints are placed on it; and there could be things like alkylates, which also have a reasonable octane profile.

And now the characteristics of those things I just mentioned as they relate to MTBE, ethanol, obviously, is soluble in water, but it is much more quickly degraded and easily removed. It doesn't have those kinds of characteristics of MTBE.

Alkylates and some of the other parameters that might—other components or constituents that might be added all to replace the volume are more likely to act as the same as the rest of the—of what the oil and gasoline people call the BTX complex—the benzene, toluene, and xylene—and other components of the gasoline is likely to stay closer to that plume and not get out ahead.

Keeping in mind that gasoline in the ground or in the water is bad, and we are going to have to get it, it is the delta badness or problem that is presented by these highly soluble chemicals that move more quickly, and the ethers generally fall into that category.

I tried to do that, not in 10 seconds, unfortunately.

Mr. GREENWOOD. You did a good job.

Mr. Pallone from New Jersey for 5 minutes.

Mr. PALLONE. Mr. Chairman, just procedurally, I was going to ask if we could have Mr. Barrett next and after the next Republican if you would come back to me.

Mr. GREENWOOD. Without objection, the Chair recognizes Mr. Barrett for 5 minutes.

Mr. BARRETT. Thank you, Mr. Chairman.

Mr. Perciasepe, you have a copy, I think, in front of you of the April 6, 1987, memorandum, correct?

Mr. PERCIASEPE. Just placed here, correct.

Mr. BARRETT. And I don't mean to blindside you with that, but my understanding is the first time the committee received this document was yesterday afternoon. Is that correct?

Mr. PERCIASEPE. I don't know when the committee received it. Personally, I don't know.

Mr. BARRETT. Let me just check and verify.

Mr. PERCIASEPE. Much of this was published in the Federal Register of 1980.

Mr. BARRETT. The memorandum I am referring to was first received by this committee yesterday morning, and this is a memorandum that makes reference to the mental health and ground-water effects of MTBE, isn't it?

Mr. PERCIASEPE. Yes. Yes, it does refer to those potential issues.

Mr. GREENWOOD. If the gentleman will yield, the counsel advises that this committee received the memorandum by fax from EPA yesterday.

Mr. BARRETT. Yesterday. So this was the first time that this committee has ever received this memorandum.

This member, again, I made reference to in my opening statement, says that the health effects of MTBE cited in this memo are,

quote, chronic inhalation toxicity, including neurotoxic, hematologic, and oncogenetic effects.

When EPA came to Milwaukee in 1995, there were complaints of headaches, dizziness, and nausea, which I would think would be compatible with that same finding. Would you agree with that?

Mr. PERCIASEPE. Yes.

Mr. BARRETT. And we were not told of this study at that time. Is that correct?

Mr. PERCIASEPE. I don't know—I have no personal knowledge. I don't have any reason to disagree with you. I would say it is likely that that is the case, but I don't know.

Mr. BARRETT. Why would EPA—and I realize you don't have any personal knowledge, but given the claims that were made at that time, why would EPA not have acknowledged its own memorandum underscoring exactly what the complaints were?

Mr. PERCIASEPE. My understanding of this memorandum in 1988, it was generated inside the toxic substances section of the agency, that is, you know, looking to see where changes are—where things are changing. And they note there is going to be an increased use of this chemical, and in so seeing that, recommend a research agenda to look into these issues.

I don't think it is conclusionary about these issues. I believe that the intent of the memo was to precipitate a research interaction with the industry that was going to produce it, which I believe did occur in the late 1980's and early 1990's, into the early 1990's, which resulted in research being conducted and an analysis made in the inhalation impacts of MTBE and of gasoline in general. That is my understanding of what the memo was for, that it was not necessarily conclusionary at the time.

Mr. BARRETT. And I understand it. But, again, for the record, when EPA came to Milwaukee in 1995, we were essentially told there were no health concerns with MTBE. And this document certainly contradicts that or at least preliminarily contradicts that, doesn't it?

Mr. PERCIASEPE. Well, look, I—it is easy for me to say I didn't participate in Milwaukee and the early phases of this. But let me just say that the purpose of the memo was to set forth a research agenda. The context of inhalation of MTBE at a pump in conjunction with the inhalation of things like benzene and toluene and olefins and paraffins and everything else that is in gasoline, it is a toxic brew of very potent chemicals. I can understand why you are trying to tease out what is any additional risk that may be provided. Inhaling gasoline is carcinogenic. So the question is—

Mr. BARRETT. I am not trying to tease out anything. I am angry that when I was standing before 600 people that EPA didn't say there are some questions. I am angry about that, because I think it was irresponsible. And now, 5 years later, to get this memorandum and to be told that there is some concern—

And I look at the Federal Register. You are right. The Federal Register here and on page T2 here, it says, the agency has reviewed these studies and has determined that additional testing is necessary to determine whether distribution of MTBE presents an unreasonable risk of injury to health as discussed above. Producers of MTBE represented by the MTBE task force have agreed to per-

form the necessary tests to determine the effects, if any, associated with the use and distribution of MTBE.

The people selling the product are the ones who are going to be determining this. I am looking for some credibility here.

Mr. PERCIASEPE. Under the Toxic Substances Control Act, which is the only place we have any authority to deal with this, that requires us—it provides the authority to require the manufacturers to do the testing and do the studies which they did do.

Mr. BARRETT. But my request to you is never in your agency go into a city again when you have a document like this and allow elected officials to stand before the public and ask them to support you and not give them a document like this. It is unconscionable that those of us who believe in a clean environment and want to have people have trust in your agency have to go back to the people we represent and say, well, I am sorry, they didn't give us all the information.

I yield back the balance of my time.

Mr. GREENWOOD. The Chair recognizes the gentleman from Iowa, Dr. Ganske, for 5 minutes.

Mr. GANSKE. Thanks, Mr. Chairman. I just have to say that I am as troubled as Mr. Barrett is that a memo come—that was written in 1987 was not made public during hearings.

I want to summarize what I took from your three testimonies. No. 1, MTBE, bad stuff. No. 2, ethanol, okay stuff. No. 3, don't throw out the baby with the water. In other words, don't throw out RFG with MTBE.

Now, Mr. Perciasepe, knowing what you know now, what would be the impact on air quality in cities like Los Angeles if oxygenates were removed from gasoline and significantly reduced?

Mr. BILBRAY. Excuse me. Could I ask the gentlemen to clarify? Is it oxygenates or the 2 percent mandate?

Mr. GANSKE. Oxygenates is my question.

Mr. BILBRAY. Okay.

Mr. PERCIASEPE. You know, based on what I know, and, believe me, I am not the complete expert on that level of—I mean, there is a lot of technical information that has to go into answering that question. But based on my understanding, oxygenates enable reduction in toxic emissions from gasoline that is burned in motor vehicles. They have other characteristics in terms of the distillation characteristics and octane characteristics of the gasoline. Can you do it without oxygenates, meet the same kind of performance standard? I believe, from what I know, that it is technically possible to do it. Whether it is possible to do it in a reasonable cost, in a reasonable time and all those other parameters that always have to be taken into consideration as we look at these things, I am not competent to be able to give you a full answer.

Mr. GANSKE. If we removed oxygenates today, would it be a good thing or a bad thing for Los Angeles?

Mr. PERCIASEPE. I think oxygenates have improved the air in Los Angeles.

Mr. GANSKE. Okay. I have been told, and we are going to hear later today, that in the absence of an oxygenate standard, an elimination of MTBE would lead refiners to increased production in blending of aromatics and alkylates. In fact, I have been told Mr.

Robert Campbell, CEO of Sunoco, who will get a chance to rebut, has recommended toluene as a substitute for MTBE. Correct me if I am wrong, but isn't toluene an aromatic?

Mr. PERCIASEPE. Toluene is an aromatic. I think our view of this would be that if you provide the flexibility of a reduced or eliminated oxygenate mandate, that you will have to have safeguards put in place to keep the backsliding, keep the baby from being thrown out with the bath water. And that will control, as the State of California does, the content of aromatics. But if you have the proper air quality performance standards, you will avoid that problem and provide flexibility on how you achieve it, which will include oxygenates.

Mr. GANSKE. If you increased production and blending of aromatics and alkylates, can you discuss for us the impact that that would have on emissions and health-related matters associated with those compounds? Would it be a good thing or a bad thing?

Mr. PERCIASEPE. I would say replacing oxygenates with alkylates or aromatics will, depending on how much you use and what you do to the other parts of the gasoline, olefins and paraffins and all the other chemicals that are in there could increase toxic emissions.

Mr. GANSKE. Thank you.

Now, I want to just finish up. I have got MTBE right here. I don't think you want me to dump this down the drain, do you—

Mr. PERCIASEPE. No.

Mr. GANSKE [continuing]. Here in Washington.

Mr. PERCIASEPE. No, I wouldn't want you to dump any part of gasoline down the water.

Mr. GANSKE. Great. How do I get rid of this?

Mr. PERCIASEPE. Once it is in the water or—

Mr. GANSKE. Now. No, how do I get rid of it? What is the EPA's recommendation of getting rid of MTBE?

Mr. PERCIASEPE. There are probably five or six different ways you can enact legislation that would provide for a path to get rid of MTBE.

Mr. GANSKE. I am just asking how do you get rid of it physically.

Mr. PERCIASEPE. How do you get it out?

Mr. GREENWOOD. What is he supposed to do with that vial after this hearing is over?

Mr. GANSKE. Am I supposed to dump it into an incinerator or what?

Mr. PERCIASEPE. I apologize. You mean, when it is in the water how do you remediate it?

Mr. GANSKE. No. I've got my little vial of MTBE. It is bad stuff. I can't dump it down the drain or I am going to contaminate Washington, DC's water, okay? So how do I get rid of it? What is the EPA's recommendation for disposing of MTBE?

Mr. GREEN. Mr. Chairman, maybe you can send it back to wherever you brought these vials from.

Mr. GANSKE. Should I give these all to Mr. Green to take back to Texas?

Mr. PERCIASEPE. I will take it to my office and store it for you. But the current method of getting rid of MTBE is burning it in gasoline.

Mr. GANSKE. So the emissions, as people drive through Iowa, can get into our groundwater.

Mr. PERCIASEPE. I mean, I don't think that that would be the result.

Mr. GANSKE. All right. Thank you very much, Mr. Chairman.

Mr. PERCIASEPE. We do have gasoline experts here, I want to say, from the Department of Energy.

Mr. GREENWOOD. The procedural next step is to recognize the gentleman from New Jersey.

Mr. Greenbaum, it looked like you were pregnant with comment there.

Mr. GREENBAUM. It only took us 6 months, not 9 months, to complete the Blue Ribbon Panel's report.

I just briefly want to note to Dr. Ganske, actually, the Blue Ribbon Panel considered and rejected a recommendation of any option that would say don't use oxygenates. We did not say that and didn't say that in our recommendations and would assume that some form of oxygenated fuel would be a part of the solution, as would some fuel formulations that had no oxygenates in them. We were concerned that, if too much aromatics came into that mix, you would lose some of the air quality benefits, which is why we called for mechanisms to assure that the air quality standards stay just as tight as they have been.

Mr. GANSKE. So you would be concerned about toluene also.

Mr. GREENBAUM. We would be concerned about any of the aromatics. We said that. That is why we constantly reject the idea that you wouldn't have any oxygenates in the mix because we understood they would be a useful part of the mix.

Mr. GANSKE. Thank you.

Mr. GREENWOOD. Mr. Pallone for 5 minutes.

Mr. PALLONE. Thank you, Mr. Chairman.

I wanted to ask Mr. Perciasepe, if we want to do so, how would we go about waiving the oxygenate requirement? For example, would you leave it solely to the States to do, to the EPA administrator? How would you actually do it if we were to legislate that?

Mr. PERCIASEPE. I think the preferred approach would be to provide a national approach to this to avoid a, you know, and this will probably sound pejorative, but a patchwork quilt of different fuel requirements. I mean, to the extent we can, and I will—I would like to defer to at least a little bit of this to some of my colleagues here, particularly from Energy. But to the extent that you have many different kinds of gasoline recipes to be produced and delivered in the country, you are going to, in general, as you know, as a proportion, potentially increase the price of gasoline and have a hard time controlling the quality of what we are expecting these recipes to do for us in terms of these other policy objectives like clean air.

On the other hand, Congressman, I am not opposed to, nor is EPA opposed to, providing the States with more flexibility. But I think that the solution we would prefer would be a national approach to dealing with the problem.

Mr. PALLONE. In the Blue Ribbon Panel, they seem primarily concerned about the potential increases in toxic air pollutants. And again to Mr. Perciasepe, but, if you know, I just want to add in,

in your view is there reason to be concerned about other pollutants as well such as carbon monoxide or not?

Mr. PERCIASEPE. As I said in my opening comments, there are a number of computer models that are around that you use to predict the emissions characteristics from a—sort of average fleet of cars. Remember, there are all these different cars as well as all these different recipes of what the emissions would be, you know, in an aggregate way. And it is based on real data from many hundreds of cars that are incorporated into these models. So you can look at different recipes. In general, if you increase aromatics, you are going to increase toxics. If you decrease oxygenates, you could have, if—depending on how the filling takes place, if you fill it with aromatics, you could have increased toxic emissions.

It should be pointed out that all the gasoline formulations we are talking about have a substantial amount of aromatics in them. I don't know what the average is, but it is at least 18 to 22 percent, something like that. So there are consequences of how you change the formula.

And this is one of the central issues that we are trying to deal with in California. If you decrease the oxygenate requirement, what are you going to put into place? So California had to go through a process of changing their phase 3 clean burning gasoline last November and December so they can specify, you know, how they would replace it and then run their version of this model I am talking about to look at the, you know, if everything else is held constant, what happens as you change the oxygenate requirement.

And generally what happens, as you change the oxygenate environment, things happen to nitrogen oxides, carbon monoxide, and other various volatile organic compounds. Some go up; some go down.

So in addition to just looking at increased nitrogen oxide potential, or decreased, you have to look at the other ones and then look at the net effect of that on the ozone problem.

Mr. PALLONE. Well, if you could tell me, what are the potential health or water quality or air quality effects of phasing down the MTBE versus phasing it out? Because obviously we have talked about one versus the other, phasing it out as opposed to phasing it down.

Mr. PERCIASEPE. I think you have hit on one of the other difficult points that are going to have to be decided between us as we move to solve this problem. I mentioned data that is available, and I think it is to some extent summarized in the blue ribbon panel report.

If you go to areas of the country that are using conventional gasoline, which may or may not have some MTBE in it as an octane booster, you see very low occurrences of MTBE detections in the groundwater—I think it is 2 percent—and you go to the RFG areas, where you use a large volume of it, up to 10 to 11 percent of the gasoline, you see more detections. So the relationship of the volume of MTBE used in the gasoline to the frequency of detection in the groundwater is clear, and it has been established by the U.S. Geologic Survey.

So that would lead you to believe that at some point there may be a volume that would be a manageable level. I am not at that

point. If you want to take the purely precautionary approach, you are going to want to completely shift. But on the other hand, as we get into this, there is going to be a technical aspect to this that needs to be looked at to balance all these public purposes that we are trying to achieve here, including air quality.

Mr. PALLONE. Thank you. Thank you, Mr. Chairman.

Mr. GREENWOOD. The Chair recognizes the gentleman from California, Mr. Bilbray, for inquiry.

Mr. PERCIASEPE. I just want to point out that my colleague from the Department of Energy keeps pointing out that I am answering these relatively correctly.

Mr. GREENWOOD. You have not noticed it, but sometimes he has been shaking his head in dismay.

Mr. PERCIASEPE. If he starts doing this, let me know.

Mr. BILBRAY. Bob, let us try to clarify. There was an interesting issue here with the questions about Los Angeles, and I was telling my colleague that maybe Denver would have been a better example because there is always the backup there. We need to clarify that California already has a reformulated mandate in the rest of the State where the Federal Government does not have a mandate. So if L.A. dropped out of the Federal mandate, we have a state-ordered mandate already there; is that right?

Mr. PERCIASEPE. That is right.

Mr. BILBRAY. So that is why the world does not come to an end. If it was some other nonattainment area or severe area, you do not have those guarantees.

Mr. PERCIASEPE. Right. But the question about the oxygenate is universal to both inside and outside L.A.

Mr. BILBRAY. What is interesting is that even to the extreme of using no oxygenates at all, we are at a point we never thought we would be at 10 years ago, and that is that there may be ways of doing it as clean without any oxygenate. I think economically we are going to maintain it, and I think that that has statistically been proven.

What I want to clarify is that when you were talking about the burden of proof regarding the California waiver, we need to clarify what that is. Your burden of proof that you are trying to determine is that you have to prove that the California formula is cleaner and will fulfill the mandate quicker, as opposed to H.R. 11 that says it is equal to or better. Is that the big difference we have between H.R. 11 and your existing mandate right now, the burden of proof of is it cleaner or is it equal to?

Mr. PERCIASEPE. In terms of the waiver request?

Mr. BILBRAY. Yes.

Mr. PERCIASEPE. Yes, the waiver request is pretty specific. Let me try to explain that, and then we can make the comparisons.

The Congress put in the Clean Air Act in 1990 that the administrator could waive in part or in whole the oxygenate requirement if the State can show that the inclusion of that oxygenate requirement is interfering with the attainment of a national ambient air quality standard.

You can see the multilayers. And so we are trying to use that provision to deal with a groundwater problem.

Mr. BILBRAY. Okay. So one thing I was concerned about is the tailpipe emission issue. In California we discovered that we grossly underestimated the evaporative emissions, so we have gone to the bar in testing the modeling based on cold start, hot start, the total emissions rather than tailpipe emissions. And I hope, when we talk about this issue, we are trying to use the best-case modeling available.

We have disagreed back and forth between the EPA and California; and frankly, to pat California on the back, when we have gone to court, we have done pretty darn well. Wouldn't you agree?

Mr. PERCIASEPE. Yeah.

Mr. BILBRAY. I want to congratulate the chairman, Mr. Greenbaum, for this report. I think it gave us the blueprint of exactly where we ought to go and what we need to move forward with. The challenge I see, though, is trying to articulate to the rest of America why you could, in a report, say that dropping the mandate in California will increase the ability for air quality to be able to be addressed, and that this flexibility is a tool to help the environment, but at the same time saying outside of California this flexibility may constitute a threat.

Can you explain to the members here why you can say, basically, move forward in California because it will help, but take a close look at what you are doing nationally, because it may hurt? Can you explain the difference?

Mr. GREENBAUM. I can certainly try, Congressman. First of all, I think the key to understanding—and you certainly understand it and I think others do, that California has for a long time had its own set of air quality standards for fuels as well as car emissions. And those, in some respects, actually have been more stringent than the standards that the Federal Government has had, although there are differences in how they are done.

Nationally, we have had the Federal RFG program. We have a program that had a first phase in January 1995 and a second phase coming into effect this year, in January 2000. What we saw is the first phase nationally actually exceeded our expectations. We got lower reductions, more reductions of air toxics, of precursors to ozone than what was even put in the act and what was required.

When we looked, however, at the next phase of RFG, what we found was that for most of those, for nitrogen oxides and for volatile organic compounds that are precursors of ozone, the new standards would actually be even tighter than what we have achieved in the first phase nationally.

The one area where that was not true was in air toxics, where the requirement for air toxic reductions from clean air RFG phase II was not as tough as what we actually achieved in phase I. And so the concern was this might be the margin that absolutely requires oxygenates or, at a minimum, requires tougher standards nationwide.

In California that was less of a problem, because California had a different way of controlling the air toxic components. And so what we had said was, in addition to any action to provide the flexibility to blend the fuels, we also needed the assurance that there was some tightening of the standards, particularly in the air toxics area, so that you could be assured that no matter what was

used, whether it was ethanol being used, although the presumption would be that ethanol would give you air toxic performance, or a fuel that did not have oxygenates, which some of the companies have said, but could meet all the other standards, that they would also meet the air toxic standards.

Mr. BILBRAY. So the real challenge is to develop those air toxic protection strategies nationally as they have done it back in Sacramento.

Mr. GREENBAUM. That is correct.

Mr. BILBRAY. A question to the EPA.

Mr. GREENWOOD. Does the gentleman request unanimous consent for an additional 2 minutes?

Mr. BILBRAY. Yes, I do, Mr. Chairman. I appreciate that.

Mr. GREENWOOD. Without objection.

Mr. BILBRAY. There was a discussion that there was a strategy here, in the 1990 modifications of the Clean Air Act, of 2 percent oxygen mandate, for energy independence. My question is, if that was the overt intent, and if that was a major factor in the implementation of this law, why did it not apply universally in the United States? Why would it only apply in those areas where there are public health threats if you want to implement a national energy independence strategy?

Mr. PERCIASEPE. I really do not know—I mean, I just know the general legislative history. I do not know why that was. I think probably those things were discussed, and the solution or the conclusion of the debate was let us do it in these areas. Because, after all, it does have, these oxygenates do have these beneficial effects. They reduce toxics.

Let me be clear. Emissions from gasoline, vapors from gasoline with oxygenates, are less toxic, whether it be ethanol or MTBE, than without it. And the same thing with the emissions and the combustion. So there was a convergence there that I can only speculate on.

Mr. BILBRAY. But we can speculate that because it was not applied universally it was an ancillary, not a major focus of the legislation.

Mark, there was a letter that your department sent to the Alcohol Fuel Caucus on November 1, 1999, in response to a question about the potential impacts of H.R. 11 on the Midwest markets. And in that letter you wrote that “a number of specific assumptions would have to be made and many complicated market interreactions would have to be addressed to address your question specifically. H.R. 11 in and of itself will have little direct or predictable effect on midwestern gasoline markets.”

Now, the fourth paragraph there, I think, is pretty telling. Would you mind reading that fourth paragraph of your letter?

Mr. MAZUR. Sure. The letter that I sent to the House Alcohol’s caucus, fourth paragraph on page 2, says: “in trying to understand all these possible effects, it is important to understand that California is a very large but relatively isolated gasoline market. Actions taken in California can and do impact other gasoline and gasoline blend stock markets. However, these impacts are limited or mitigated by the lack of direct and low-cost logistical links between California and these other gasoline supply centers. Other than the

effect on the demands for and the price of oxygenates like MTBE and ethanol, impacts on the Midwest markets caused by California actions are likely to be limited.”

And that is all in the context of the discussion of H.R. 11.

Mr. GREENWOOD. The gentleman’s time has expired. The Chair recognizes the gentleman from Texas, Mr. Green, for inquiry.

Mr. GREEN. Thank you, Mr. Chairman, and I am glad my colleague from California had an extension on his time, because we talk a lot slower in Texas, and I might ask for that, too.

Mr. Mazur, in your testimony you suggested phase-in of a number of years, if we actually abolished MTBE. We have heard 3 or 4 years from Congressman Forbes. Does the department have any suggestion: 3 or 4 years, 5, 7 years?

Mr. MAZUR. Well, we understand some people in the industry have said 4 years would be a sufficient amount of time to allow the refining distribution systems to adjust to a situation where MTBE was not used in gasoline. We have an ongoing study by the National Petroleum Council, which is an advisory council made up of industry members to the Secretary of Energy, and they advise on oil and gas issues.

Looking at the total investment and construction costs facing the refining industry, with a wide range of product changes that are taking place, Tier 2 rules and so on, they conclude it would be difficult to address the low sulfur gasoline rules at the same time you are faced with eliminating MTBE.

Mr. GREEN. That gets to my second question. Then you are talking about the Tier 2 standards?

Mr. MAZUR. The low sulfur gasoline and then the ultra low sulfur diesel fuel.

Mr. GREEN. And the concern I have—and can the Department of Energy assure me that the refiners will have the additional demands for capital engineering or resources to not only eliminate MTBE at the same time they are preparing for Tier 2 potential toxic control requirements?

Mr. MAZUR. That is exactly the question that the National Petroleum Council is looking at, and their report will be done sometime this summer.

Mr. GREEN. But 4 years may be too short; is that correct?

Mr. MAZUR. At this point I don’t want to speculate if it is too short or too long or whatever.

Mr. GREEN. So if we passed a bill that said 3 or 4 years, as Congressman Forbes mentioned, we wouldn’t know?

Mr. MAZUR. When you look at these costs and benefits, you will be weighing costs and benefits on the refining industry, on the consumer and on water quality, and you will be pulling all those together. What we know is a faster phase-out or phase-down would be more costly than a slower one. So you will have to make those judgments.

Mr. GREEN. Mr. Bilbray is gone, but in an aside I know of the statement from the Department about the lack of access to the California market from the southern producers, but we have a pipeline we are working on to go to El Paso and ultimately to California. So we will send lots of that out there so we can enter that

market from Texas. But that pipeline is going to be a few years being built.

I have some questions of Mr.—could you pronounce your name again?

Mr. PERCIASEPE. Just say Bob.

Mr. GREEN. Bob. Okay, Bob. I understand the EPA is getting ready to propose a regulation that relaxes the standards for phase II of RFG. Supposedly EPA is planning to increase the limits on VOC emissions and allow refiners to take credit for certain carbon monoxide reductions. Why is this relaxation necessary?

Mr. PERCIASEPE. We have a National Academy of Sciences report that I think was alluded to in some of the opening comments that looked at the relative reactivity for the creation of ozone of hydrocarbons under different uses of oxygenates. And one of the things that the National Academy of Sciences' report pointed out is that ethanol does do a better job on carbon monoxide.

Mr. GREEN. So the relaxation of those would be to use ethanol; is that correct?

Mr. PERCIASEPE. Well, it would be.

Mr. GREEN. I hate to interrupt, but I only have so much time.

Mr. PERCIASEPE. I understand.

Mr. GREEN. So the reason for that relaxation was so that refiners could use more ethanol?

Mr. PERCIASEPE. Well, it would account for the increased carbon monoxide reduction that you get from the use of ethanol. How it is used by anybody will be up to them. And we have not made a proposal yet; we are just in interagency discussions about the scientific facts of it.

Mr. GREEN. The concern I have—and again not only do I represent where the refineries are at but the people who live around them—but it is my understanding that the proposal would result in not only more emissions of VOCs but also more emissions of toxic air pollutants. Is that correct?

Mr. PERCIASEPE. Well, those would be one of the things that would have to be analyzed in the proposal process.

Mr. GREEN. In the EPA can you tell me, if you do approve those, that that would not allow for any backsliding in the environmental standards of the RFG program?

Mr. PERCIASEPE. The RFG statutory requirements will have to be maintained. The issue of backsliding from current levels, which I think we have heard from a couple of places we have been overachieving, and Dan brought this up—we have been overachieving in many of these areas on toxics—will be a very important issue that we would have to look at in the proposal process. We cannot do what you are suggesting by any kind of fiat. We would have to put a proposal out, there would have to be public comment, and we would have to analyze it.

Mr. GREEN. And again, my concern is that the RFG program, and MTBE is part of it because there are only two RFGs, MTBE and ethanol—and by the way, Mr. Chairman, for the record, RFG is 8 percent, alcohol is 8 percent, whereas MTBE is 85 percent of the RFG. Is that correct?

Mr. PERCIASEPE. It is 85 to 87 percent is MTBE.

Mr. GREEN. So we are talking about something substantial to RFG if we do remove MTBE.

I know RFG has done better than the modeling. It is a concern of some of us on this panel that we do not want to backslide even to the modeling amount. And I know the industry is split, but we have benefited more from that cleaner air than the modeling expected; is that correct?

Mr. PERCIASEPE. I'm sorry?

Mr. GREEN. The modeling, when we first went into RFG, we expected so much, and that was why we went into the program; but the actual use of RFG, MTBE, ethanol for its small percentage, actually produced better results than the modeling expected.

Mr. PERCIASEPE. That is correct, especially in the area of toxics.

Mr. GREEN. So the concern is that if you provide more use of ethanol, or if there is backsliding, I consider backsliding from actual clean air now and not from the modeling. Does EPA still believe that?

Mr. PERCIASEPE. I agree with that.

Mr. GREEN. Mr. Chairman, I know my red light is on, but if I could have one more question, although it is pretty long.

Mr. GREENWOOD. Without objection, the Chair will grant an additional 1 minute to the gentleman from Texas.

Mr. GREEN. I might get the question in.

Bob, section 6 of the Toxic Substances Control Act, does that allow the EPA to regulate or ban MTBE?

Mr. PERCIASEPE. I think it is either section or Title VI of the Toxic Substances Control Act gives EPA some broad authority to look at chemicals in commerce and whether they are posing an unreasonable risk to the environment or public health. There are many, many tests that we would have to overcome to actually use that provision of the Toxic Substances Control Act to regulate a particular chemical in commerce.

And it is a risk-benefit, cost-benefit, looking at all other alternatives. And then the remedies that are available are reduced use—it does not necessarily—

Mr. GREEN. Well, let me go on with the question. So obviously, EPA can do it?

Mr. PERCIASEPE. That is correct.

Mr. GREEN. If you use it under title or section 6, do you also weigh the problem of—for example, there are a lot of pesticides and herbicides used in farming that can get into the groundwater, and some of which have been proven to cause cancer, even though MTBE has not. Do you balance that?

So if we have a choice of more ethanol to plant more corn, and to make it productive we used more pesticides herbicides, what have you, does EPA balance that using the section 6 or Title VI?

Mr. PERCIASEPE. Title VI is a pretty unbounded risk, risk-benefit act. And if there is any significance or anything of significance to what you are mentioning, it would have to be analyzed at the Department.

Mr. GREEN. I am not suggesting we should under title or section 6 talk about farm chemicals; I just want to make sure that EPA looks at the whole gamut instead of just one particular problem.

Again, my last question, Mr. Chairman, to follow up was—

Mr. GREENWOOD. The Chair has granted the gentleman from Texas even more time than he granted the gentleman from California, so the gentleman's time has expired.

Mr. GREEN. Okay. I just talk a little slower, Mr. Chairman. If we have a second round, and maybe we will not have anybody here left—

Mr. GREENWOOD. The gentleman yields back his time. There will not be a second round.

Does the gentleman from New York wish to inquire of this panel?

Mr. LAZIO. I do, Mr. Chairman.

Mr. GREENWOOD. The Chair grants 5 minutes to the gentleman from New York.

Mr. LAZIO. I can understand, gentlemen, why, if you were from Texas or Iowa, you would have some strong feelings about what type of additive was being used, but I think we need to try and move past that and deal with actual science. Let us get a sense of ethanol and how volatile it is.

Now, I live in New York. We do not have any natural production of either of those sources, so it means that there has got to be transmission. What kind of difficulties does the ethanol production or use entail if that was the only potential additive here?

Mr. PERCIASEPE. I will answer very quickly, and then my colleagues might want to fill in.

Ethanol does create an increased challenge when blended into gasoline at the volumes we are talking about here. To achieve the 2 percent by weight for ethanol, it is about—and I am probably going to get this wrong—it is about 5.5 percent by volume. When you start to get to these kinds of volumes, between 5 and 10 percent by volume of ethanol, the vapor pressure of the gasoline blend will go up. And as the vapor pressure goes up, the emissions potential goes up.

Now, that can be compensated for in the blend stock that you blend the ethanol into. So the performance standards can be achieved with ethanol. We are confident that that can happen; and indeed, we expect it to happen, particularly in areas that are currently using ethanol for the reformulated gasoline program even as the challenge increases with the second phase of reformulated gasoline. But it does require further work on the blend stock that you would blend it into.

Mr. MAZUR. If I may, I would like to address the logistical side of this.

In order to blend ethanol into gasoline, say in New York, you would need to somehow get the ethanol to New York, and that would generally be trucked or transported by rail to the New York area. There would need to be some additional investment in terminals, blending facilities and so on. It would be a manageable amount of investment, but it would be some additional amount of investment.

Mr. LAZIO. Let me ask Mr. Perciasepe, if I can, about EPA investment in alternatives to either. Do we have grants that have been let out? Do we have studies being done? Where are we overall on alternative sources?

Mr. PERCIASEPE. We do have health effect studies under way on, I think, probably all the reasonably anticipated oxygenates that

might replace MTBE or be used in the oxygenate type of program, and we do know a lot about some of them already.

Mr. LAZIO. Anything promising? Let me ask you: How much investment is being made in alternatives?

It is pretty clear, I think, if you listen to the growing drumbeat and the concerns of the members, that both of these oxygenates have serious problems that we are concerned about. Where is the EPA investment? Where is the Federal investment to try to develop some alternative oxygenates?

Mr. PERCIASEPE. I will let you mention this.

Mr. MAZUR. I can at least answer part of that. At the Department of Energy, we have been undertaking a fairly serious and long-standing R&D program in cellulosic ethanol, not corn-based ethanol, as a potential oxygenate. That is a program that is probably a few years away from having commercial scale of ethanol production. But if it does work out, you would have feedstocks that essentially are considered waste products today turning into ethanol that could be used as an oxygenate in the future.

Mr. LAZIO. Give me a sense of scale, if you can, in terms of investment. What are we talking about in terms of DOE investment? In development.

Mr. MAZUR. In the ethanol area, alternative fuel area?

Mr. LAZIO. Yes.

Mr. MAZUR. I do not have the exact figures. I would guess \$100 million a year, somewhere around that. Maybe the high tens of millions of dollars.

Mr. LAZIO. And how much of a difference, in your opinion, would that make in terms of when an ethanol derivative, if I can use that term, might be in a position to be marketed?

Mr. MAZUR. Well, as Mr. Ganske knows quite well, we have a large amount of ethanol produced today. Much of it from corn-based ethanol, but there are a few other sources.

Mr. LAZIO. You are talking noncorn right now?

Mr. MAZUR. Generally noncorn ethanol.

Mr. LAZIO. Right. So how much is money holding you back from the development of a noncorn alternative?

Mr. MAZUR. Part of it I think is money, part of it is just the advancement of the technology. It is kind of hard to separate the two out. I do not think anyone at the Department would turn down additional support for this.

Mr. LAZIO. But you would have to establish to us what we would be buying with it, and I am not hearing that right now.

Mr. MAZUR. And that is partly because our office of renewable energy is really the one that has the lead there. I could have the assistant secretary get in touch with you on that.

Mr. LAZIO. I think that would be very helpful.

Mr. GREENWOOD. Time of the gentleman has expired. We thank the panel for your testimony and for your responses.

Mr. GREEN. Mr. Chairman.

Mr. GREENWOOD. The Chair recognizes the gentleman from Texas.

Mr. GREEN. Mr. Chairman, I just wanted to be sure we could submit written questions, because I have a list of them, just like other members.

Mr. GREENWOOD. Certainly. I regret that we cannot offer a second round, but we have two more panels to go.

Mr. Shimkus has arrived for inquiry. The Chair recognizes the gentleman for 5 minutes.

Mr. SHIMKUS. I apologize, Mr. Chairman. I have been in another meeting, as I am sure other members have been. I will try to be really brief.

Director Perciasepe—I hope I pronounced that fairly close.

Mr. PERCIASEPE. Bob is easier.

Mr. SHIMKUS. The chairman butchered mine.

You mentioned Congressman LaHood and the VOC standards. Can you just reiterate that, for those members who may not have been here, for that little brief statement, the role of carbon monoxide. And is that marrying what Director Skinner has presented to you all from the Illinois EPA?

Mr. PERCIASEPE. Yes, and we did go through that again with Mr. Barrett just a minute ago; but don't worry, I will quickly summarize.

The National Academy of Sciences did a look at reactivity of different VOC compounds that are emitted with different oxygenates. While they did not find a lot of fruitful ground there, they did note, and specifically noted, that ethanol does an improved job of reducing carbon monoxide.

Carbon monoxide is also a precursor to ozone. It is not the same as the volatile organic compounds. So the question then is, if you are using ethanol in reformulated gasoline, and you are looking at VOC emissions as opposed to carbon monoxide emissions, but you get more carbon monoxide reductions, should you somehow be able to equate the ozone-forming aspects of this, which is the goal of the program?

And the things you have to balance there—and we discussed this—is that if you say that the increased carbon monoxide performance should be taken into account, but you end up with some increased VOCs and it balances out from an ozone perspective, what does that do with a toxic perspective? Because the VOCs tend to have toxic emissions in them.

So that is the kind of stuff, if we did a proposal on this, we would have to look at all those aspects.

Mr. SHIMKUS. Great. And we are looking forward to the finalization of all of that.

Mr. Mazur, if we take 11 percent of the oxygenate program off the market, what does that do to the cost ratio on the price of a gallon of gasoline presently?

Mr. MAZUR. You are referring to if you were to take the MTBE out of gasoline?

Mr. SHIMKUS. Or the ethanol component.

Mr. MAZUR. Right. We estimate that, in the long run, that making up that amount of volume would increase the cost of gasoline by some 3 to 4 cents a gallon. The lower end of that range would basically represent if the oxygenate mandate had been taken away as well. The higher end, if you still had to meet the oxygenate mandate.

Mr. SHIMKUS. And not a good statement to make in light of the high gasoline prices today?

Mr. MAZUR. As I said earlier, I think you need to weigh the cost and benefits of all the things you are doing here, and part would be increased cost for gasoline; part of it might be improved groundwater.

Mr. SHIMKUS. Have you all done an analysis of what the industry might do in the absence of MTBE?

Mr. MAZUR. I think Bob Perciasepe said that there would be a number of steps that the industry could take to make up that loss of volume and the loss of octane and other attractive properties.

One would be increase the amount of ethanol that was used; second would be increase alkylates and other types of substances, and also perhaps increase some of the use of toxics.

Mr. SHIMKUS. I just want to put on the record my concern—and I know legislation that was drafted did not cause this to happen, and in my opening statement I would also have said that we want to make sure we do not throw the baby out with the bathwater—in that to replace the oxygen issue that we go back to aromatics and we have actually a dirtier fuel, which is a distinct possibility based upon the capital investments that will probably be required for alcoholates.

With that, Mr. Chairman, and trying to be brief, I yield back.

Mr. GREENWOOD. The gentleman's time has expired, and I think finally we thank this panel for your testimony and for your stamina and excuse you at this time.

I will call the third panel. Mr. Thomas Skinner, the director of the Illinois Environmental Protection Agency; Mr. Jason Grumet, executive director of the Northeast States for Coordinated Air Use Management; and Mr. Milazzo, who will be introduced by the gentleman from New York, Mr. Lazio.

The Chair recognizes the gentleman from New York for an introduction of his guest.

Mr. LAZIO. Thank you, Mr. Chairman. I am pleased to be able to welcome and introduce John Milazzo, who is an attorney with the Suffolk County Water Authority. That is my home county, and it also happens to be the largest groundwater supplier in America. It serves in excess of a million residents of Suffolk County with water developed from groundwater resources within the county, or rather underneath the county.

Mr. Milazzo serves as a resource for water authority management in the daily operation of the water authority. He has worked on a number of efforts critical to the environmental integrity of the largest source of pure groundwater in New York, the largest aquifer actually as well.

And I just want to comment, if I can, that I have had the pleasure of working with the Suffolk County Water Authority for many years. They have the highest level of professionalism. I know they, together with the Suffolk County Department of Health, have been out front and probably been doing more in terms of testing of tanks and groundwater, because they are the largest groundwater supplier in the Nation than any other jurisdiction.

So they have had some interesting data that they have been sharing with me, including—and I am not sure that Mr. Milazzo will be testifying as to this, but the sense that there may be another source of contamination beyond just tank leakage.

But I would like to welcome and thank Mr. Milazzo for being here. Thank you, Mr. Chairman.

Mr. GREENWOOD. Thank the gentleman from New York for his introduction, and now turn to Mr. Skinner and yield to him 5 minutes for his statement, please.

STATEMENT OF THOMAS SKINNER, DIRECTOR, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY; JASON S. GRUMET, EXECUTIVE DIRECTOR, NORTHEAST STATES FOR COORDINATED AIR USE MANAGEMENT; AND JOHN C. MILAZZO, ATTORNEY, SUFFOLK COUNTY WATER AUTHORITY

Mr. SKINNER. Thank you, Mr. Chairman, and members of the committee. It is a pleasure to be here and an honor to be here before you today.

You have heard this morning from a number of folks that the RFG program has been successful since its implementation. I am here to take that a step further, I guess. I represent the State of Illinois. I am the environmental protection director there. I am here because Illinois is proof that RFG, without MTBE, is a successful program; and it has worked extremely well for us in the past years.

Over 95 percent of our RFG in Illinois contains ethanol, not MTBE. We have had tremendous reductions of VOCs, carbon monoxide, and air toxics since implementing RFG. For example, 100 tons per day of VOCs are reduced, which is an essential part of our State implementation plan, a point that Bob Perciasepe made in passing a while ago, but it is terribly important.

Our overall State air quality plan, as well as reductions of toxics, is well beyond what was anticipated when the program was first put into place. In fact, I am not sure what the consultant to the Lung Association on the next panel is going to say here today, but I can tell you that the Illinois chapter of the Lung Association has been very laudatory with regard to our ethanol RFG program and, in fact, believes very strongly in its efficacy.

We are concerned—I guess Illinois is concerned that in reaction to a very real problem, MTBE contamination, that, and I am trying to search for another metaphor, but essentially that the baby will be thrown out with the bathwater—I came up with a blank in trying to find an alternative there—the very beneficial oxygenate program might be eliminated as well. We believe such an action would cause environmental backsliding, both in our State and elsewhere. We have all kind of danced around the issue here this morning. Everyone says we want to eliminate MTBE, but we don't want environmental backsliding. I am not sure anybody has come up with a way to do that. We think the way to do that is ethanol.

We are also concerned—and this is a slightly different point—with environmental backsliding as a result of the new Phase II RFG program that went into effect January 1 of this year. If gas formulations are switched, even in part, from ethanol to MTBE because the new Phase II RFG program makes MTBE use cheaper for the refiners, then Illinois and others likely will suffer the same fate as New York, California, the northeast States, and others: widespread contamination of our water supplies.

Already, even with 95 percent ethanol use in our State, we have suffered three instances where we have had to shut down public drinking water wells due to MTBE contamination, and we have had MTBE hits slightly below the action level in literally hundreds of other locations. This does not even take into account the private water supplies where we do not do quite as much monitoring.

Already there is a rumor I heard last night—and it has been our fear all along—that at least one of our oil producers will switch to MTBE as a result of the Phase II regulations for the summer season. There has been a lot of discussion about this. USEPA has told us repeatedly that will not be the case. It has been our fear that will in fact happen, and we will have increased amounts of MTBE in our State rather than less. This is not acceptable.

We agree a solution must be found for the MTBE problem, but I emphasize it is important that the solution not create or exacerbate other problems in the process. We do not need more benzene and toluene in gasoline in Illinois, nor do I think anybody else in the United States desires that.

In summary, we urge this committee and Congress as a whole, No. 1, to deal with MTBE, but recognize the improvements that oxygenated fuels have brought and that the alternative of ethanol does exist. And, No. 2, urge my counterparts at USEPA to recognize the role that oxygenates, and ethanol in particular, play in reduced carbon monoxide and thereby reduced levels of low level ozone.

Thank you for your time this morning.

[The prepared statement of Thomas Skinner follows:]

PREPARED STATEMENT OF TOM SKINNER, ILLINOIS EPA DIRECTOR

It is an honor for me to appear before you today as you continue to evaluate implementation of the reformulated gasoline program. Depending on one's perspective, that program raises some concerns and/or a continued opportunity to improve the quality of our air in Illinois and across the nation.

Our first concern, as many of you already know, is that the Chicago metropolitan area could be forced to use reformulated gasoline that uses methyl tertiary butyl ether (MTBE) as the oxygenate, unless U.S. EPA makes some fundamental policy changes in the next few months on Phase II reformulated gasoline (RFG) regulations.

Our second concern is that the oxygenate requirement for RFG not be eliminated entirely in overreaction to the growing awareness of the MTBE threat to the environment, particularly our groundwater and surface water. That would be one case, where the old cliché "let's not throw out the baby with the bathwater" (or in this case groundwater) would certainly be true. The oxygenate requirement has helped clean the air in our urban areas and there are environmentally beneficial oxygenate blends, in particular those using ethanol, which have been a great success in the Chicago and Milwaukee areas, and which I will discuss in more detail later.

The recent "60 Minutes" segment on MTBE described it as "already the second most common water contaminant in the country," noting that in New Jersey it has turned up in 65 public drinking water supplies and in Long Island, New York in more than 100 public water supplies. The New York Times recently reported state environmental officials had catalogued 1,500 incidents of MTBE soil or water contamination for all of New York state.

Detection of high levels of MTBE in drinking water supplies in Santa Monica and South Lake Tahoe, California has forced the closure of these resources.

You may be surprised that in Illinois, even though MTBE has not been a significant factor in RFG blends sold in-state, we have found detections of MTBE in 26 public water supplies out of more than 900 that participate in our state laboratory program.

Three of our community water supplies, East Alton, Island Lake, and Oakdale Acres, had to discontinue use of wells as a result of MTBE contamination. Oakdale

Acres had to shut down the entire supply and hook-up to an alternate source of water.

Illinois EPA is developing proposals to amend the state groundwater quality regulations to establish both a groundwater quality standard and preventive response level for MTBE. Additionally, sampling at approximately 100 leaking underground gasoline storage tanks sites has indicated MTBE in the soils at about three-quarters of them. As a result, we are also establishing cleanup objective levels for leaking tank cleanups and voluntary site remediation projects.

So you can understand why we are very alarmed about the prospect of being forced to switch from ethanol to MTBE as a result of the new Phase II RFG regulations and the potential for additional MTBE contamination of Illinois groundwater supplies. Since the reformulated gasoline program was introduced in the Chicago area in 1995, more than 95 percent of the area's gasoline has contained ethanol as its oxygenate. Ethanol-blended RFG has enjoyed the acceptance of millions of vehicle owners in that area since its introduction. In fact, refiners serving areas such as Milwaukee, St. Louis and portions of California have chosen to use ethanol as opposed to MTBE. In our neighboring state of Wisconsin, the implementation of the RFG program in the Milwaukee area in January 1995 was initially met with public outcry. Within weeks of the start of the program, citizen complaints of the fuel causing headaches, dizziness, and nausea began pouring into U.S. EPA. That outcry quickly ended when refiners substituted ethanol in the RFG blend used in the Milwaukee area.

MTBE is an organic chemical which is highly soluble in water and travels faster and further in soil and groundwater than other gasoline constituents. MTBE can be detected in water by taste and smell at extremely low concentrations of 20 to 40 parts per billion. MTBE is also persistent in that it degrades very slowly by natural chemical or biological processes within the soil or groundwater environment. It also does not respond well to groundwater remediation options such as treatment through the use of granular activated carbon or air stripping, processes typically used to clean up organic chemical contamination.

Due to this increasing risk to our nation's drinking water supplies, actions are being considered and undertaken on several fronts. California Governor Gray Davis issued an executive order to phase-out the use of MTBE in California, and the California Air Resources Board recently adopted requirements curtailing its use by the end of 2002. In November 1998, the USEPA appointed a Blue Ribbon Panel to investigate issues regarding the use of oxygenates in RFG and in its July 1999 Final Report recommended that the use of MTBE should be substantially reduced.

In Illinois, the Chicago City Council adopted a resolution demanding that state and federal environmental agencies take appropriate action to prevent the use of MTBE in gasoline in the Chicago area. Due to the environmental characteristics of MTBE I discussed earlier, I believe the concerns expressed through the above actions are warranted. However, the appropriate legal means to limit or ban the use of a gasoline component is not clear. Section 211(c) of the Clean Air Act (CAA) limits the ability of state or local units of government to affect the characteristics of gasoline. We have heard that USEPA is considering seeking to prohibit or limit MTBE under the Toxic Substances Control Act. If that is the case, because of the typical length of time a TSCA process takes more than four months we also hope it will not become another obstacle to the continued use of ethanol-blended RFG in Chicago and other areas where it is now in use.

In attempting to address concerns about MTBE contamination of drinking water, however, the overall role of oxygenates in reformulated gasoline has also been questioned. As I mentioned earlier, oxygen in gasoline provides a significant air quality benefit by reducing emissions of VOCs, carbon monoxide, and toxic air pollutants such as benzene, a known human carcinogen. In fact, due in large part to the role of oxygenates, Phase I RFG has far exceeded the minimum emission reduction requirements. I understand that toxic air emissions have been reduced by approximately 27 percent compared to the 15 percent reduction requirement. Acknowledging these benefits, both the Blue Ribbon Panel and the North Eastern States for Combined Air Use Management (NESCAUM) recommended that even while dropping the RFG oxygenate requirement, USEPA seek to ensure that there is no loss of the current air quality benefits.

The Clean Air Act requires RFG to contain at least 2.0 percent oxygen by weight. The presence of oxygen in fuels allows the blend to burn more completely, reducing exhaust VOC and toxics emissions. The two primary "oxygenates" used in RFG are ethanol and MTBE. Ethanol-blended RFG is used primarily in the Midwest and makes up approximately 15 percent of the RFG supply. MTBE, which can be blended into RFG at the refinery and shipped throughout the country via pipelines, makes up roughly 84 percent of the RFG oxygen market.

Chicago is one of nine areas required by the Clean Air Act to market cleaner-burning reformulated gasoline. Since the inception of this program in January 1995, the Chicago area has benefitted through reduced vehicle emissions of volatile organic compounds (VOCs), carbon monoxide, and toxic air pollutants. The CAA requires all ozone nonattainment areas to reduce VOC emissions by 15 percent from 1990 levels by 1996. In Chicago, the 15 percent reduction requirement equated to a total of approximately 250 tons per day. The federal RFG program was one of the key elements in our State Implementation Plan strategy to achieve this reduction, reducing VOC emissions by over 100 tons per day. The use of a cleaner burning gasoline provides an area with immediate emissions reductions, as opposed to improvements in vehicle engine technology which, although necessary and important, accrue over the course of years as consumers purchase the new vehicles.

The CAA also requires ozone nonattainment areas to continue to reduce ozone forming emissions by 3 percent per year until attaining the ozone national ambient air quality standard (NAAQS). The use of RFG will continue to play a large role in area's like Chicago meeting this "Rate-of-Progress" requirement and ultimately meeting the ozone NAAQS.

Phase II of the RFG program began in January. The use of Phase II RFG will further reduce VOC and toxic air pollutant emissions, increasing the reduction requirement from 15 to 25 percent. Phase II RFG will also reduce emissions of oxides of nitrogen (NOx), which also contributes to the formation of ozone. In Chicago, and likely throughout the rest of the country, the use of RFG provides more emissions reduction benefit than any other measure. Currently, approximately 30 percent of all the gasoline sold nationwide is reformulated gasoline, with the State of Missouri joining the program for the St. Louis area beginning last summer.

I believe that the RFG oxygenate requirement should be maintained, and that ethanol should be allowed to play a larger role in improving our nation's air quality.

The cleaner burning properties of ethanol also reduce emissions of carbon monoxide, a criteria pollutant. Ethanol use has proved highly successful in the oxygenated fuels programs in carbon monoxide nonattainment areas such as Denver and Phoenix. Carbon monoxide is also a precursor to ozone formation. In May 1999, the National Research Council recognized this, stating that carbon monoxide in vehicle exhaust emissions contributes about 20 percent to the overall reactivity of motor vehicle emissions. In addition, ethanol biodegrades quickly in the soil and groundwater, therefore not providing a threat to our drinking water supplies.

The National Governors Association Center for Best Practices concluded last month that "ethanol's positive impact on air quality and fuel performance and minimal water quality risks and health effects make it the most viable replacement fuel additive."

The California Environmental Policy Council, chaired by California EPA Director Winston Hickox, also recently unanimously approved reports which found no air quality, water quality or health problems associated with the use of ethanol as an oxygenate in California's cleaner burning gasoline program.

We hope and expect the Phase II RFG program to continue to provide air quality benefits.

However, in their current form, the new RFG requirements may jeopardize the benefits supplied by the use of ethanol. This is because the summertime VOC emission reduction requirements for Phase II RFG necessitate the use of a very low volatility fuel. Since the addition of ethanol slightly increases the volatility of the resulting blend, an even lower volatility (and therefore more expensive) base gasoline must be supplied. Without such a base gasoline to accommodate the addition of ethanol, and refiners' willingness to produce such a base gasoline, ethanol-blended RFG may be effectively excluded from the summertime program.

Many are citing this situation as another reason to drop the RFG oxygenate requirement completely. We believe that taking that step is unnecessary and unwarranted.

The Phase II RFG compliance program does not take the benefit of reduced carbon monoxide emissions into account. Dropping the oxygenate requirement would result in an increase in these emissions and in ozone levels. In November 1999, the Illinois EPA submitted an analysis to USEPA quantifying the carbon monoxide emission reduction benefits, and proposing a means to incorporate these benefits into the RFG program. I understand that the USEPA has, or will soon be, submitting a proposal to the Office of Management and Budget to propose changes to the RFG program to take these benefits into consideration. I commend USEPA for taking this action and encourage them to provide the maximum benefit for the carbon monoxide reductions, and design a program that offers sufficient flexibilities to petroleum refiners and ethanol blenders in order to encourage further and expanded use of this clean fuel additive.

In summation, the reformulated gasoline program has been an unqualified success in the Chicago area, and we are looking forward to the additional benefits which will be provided by Phase II of the program. We believe that the use of oxygenates in reformulated gasoline has also provided significant air quality benefits in our nation's metropolitan areas, well beyond those required in the Clean Air Act. Although we share the nation's concerns about MTBE contamination of drinking water, and agree that the use of MTBE should be phased out as quickly as practicable, we believe that the reformulated gasoline oxygen requirement should be maintained and that the proper benefit for the use of ethanol should be incorporated into the RFG program.

Thank you for inviting me to join you today.

Mr. GREENWOOD. Thank you for your testimony.
And the Chair recognizes Mr. Grumet for his testimony.

STATEMENT OF JASON S. GRUMET

Mr. GRUMET. I would like to thank the Chair and members of the committee for the opportunity to speak to you today. My name is Jason Grumet, and I am the director of an organization called NESCAUM, which represents the air quality agencies in the eight northeast States. I am pleased to be here on their behalf.

I am also pleased to be here as a member of what, for me at least, has been a truly unprecedented collaboration, a coalition between the northeast States, national environmental organizations, and the American Petroleum Institute companies, Sun Oil Company, and other independent oil refiners and distributors to try to bring together a set of consensus principles that we hope can form the basis of timely action.

Now, the history of this problem has been long on discussions of problem and short on discussions of solutions, so I will try in my brief testimony to reverse that ratio and focus the bulk of my comments on these six principles for legislative action that we believe are necessary to move this debate forward.

I would like to say a word or two about the problem. And based on the desire for brevity, I will be so brief as to probably confuse some and maybe even inflame others. And if that is the case, I suggest my full written comments and an earlier study that we have provided to the committee might help.

To understand this problem, we have come to conclude that MTBE has been good for public health. MTBE has also been bad for environmental quality and, in certain situations, very bad for the quality of life for the few members of our society who have been unable to use their local drinking water. The challenge before this committee is how do we mitigate the significance and unacceptable environmental harms that MTBE poses without sacrificing the very considerable public health benefits that it has provided.

The use of MTBE in gasoline has substantially reduced smog-forming emissions and, even more importantly, we believe substantially reduced the emissions of known human carcinogens, like benzene. As we remove MTBE, if we do it precipitously and without thought, more toxic substitutes will come into the gasoline supply and we will have undermined public health.

That said, we must have a severe curtailment of the use of MTBE, because at present levels MTBE is posing an unacceptable risk to our natural resource water quality. At present the statute, the Clean Air Act, for which we have great respect, and the authors of which, whom we have great respect for, prevents States

and also prevents EPA from our fundamental obligation to manage risk. We are not capable with the statutory authority we have right now to manage this difficult problem.

So it is with great respect for that statute that I would like to propose six different principles.

First and foremost, we must repeal the oxygen mandate. It is simply not possible to maintain air quality benefits, to protect water quality, and to maintain a stable price and supply of gasoline in the Northeast while the oxygen mandate is in place.

As we severely curtail MTBE use, what we get is a de facto ethanol mandate in the Northeast. Due to the volatility of ethanol used in the summertime, that could actually exacerbate our ozone problem. That would be unacceptable. Moreover, we are ambivalent about the distribution issues and fear that a single product mandate which is not mindful of market constraints could cause unacceptable price increases.

That said, ethanol has many lovely attributes. It does not have the same type of risk in groundwater, and it has substantial benefits, we believe, to agriculture policy, to energy policy and to climate change policy. In the northeast, we embrace the goal of increasing the use of renewable resources; and in particular, we are very optimistic about the role that biomass ethanol in our region's energy future.

That said, there are policy approaches to support those legitimate ends that are far preferable to forcing the use of ethanol in the summertime, which is the worst opportunity, and in regions of the country that are as far away as possible from its production.

Second, we have to phase down and cap the use of MTBE in all gasoline. We believe that if we severely curtail MTBE to its historic levels, and continue to improve our air quality programs, we can adequately mitigate this risk while maintaining the air quality benefits at an acceptable cost. While it is politically attractive, a precipitous ban on MTBE we believe will undermine public policy, and for that simple reason, we continue to not support that approach.

That said, we agree with the earlier sentiments that knowledge does evolve. And if in fact a Federal reduction of MTBE we find to be inadequate, States and EPA must be authorized to act and take the next step to further reduce or, if necessary, ban MTBE. We do not believe we have that authority in the States. While we recognize EPA's frustration about their inadequate authority and appreciate their desire to leave no stone unturned, we are not confident an approach based on existing TSCA authority will be satisfactory.

Fourth, we must maintain the full air qualities benefits of this program. In particular, the air toxic benefits using RFG with MTBE have far exceeded the minimum statutory requirements. As we work with our partners to provide the oil industry with the flexibility that it needs to solve the MTBE problem, we must make sure that flexibility is not used to undermine air quality. In particular, I am pleased that members of the American Petroleum Institute and the Sun Oil Company support this goal, and we have language I hope we can bring to this committee in the near future to achieve that end.

Last, we should promote consistency through pushing for timely and effective Federal action. That is the best way to avoid a patchwork of different State laws. And we have to ensure that the petroleum industry is granted adequate lead time to make a shift away from MTBE that does not undermine environmental quality.

In closing, we recognize the challenge that the committee faces to balance the intense and diverse interests before you. Until recently, everyone has been in a separate camp. States have been in one place, the oil industry in another, the oxygen industry in a third, and the environmental community in a fourth. I personally am greatly encouraged that three of those four camps have now come together around a set of what we hope to be prudent principles for action.

Thank you.

[The prepared statement of Jason S. Grumet follows:]

PREPARED STATEMENT OF JASON S. GRUMET, EXECUTIVE DIRECTOR, NORTHEAST STATES FOR COORDINATED AIR USE MANAGEMENT

Thank you Mr. Chairman. My name is Jason Grumet and I am the Executive Director of the Northeast States for Coordinated Air Use Management (NESCAUM). NESCAUM is an association of state air pollution control agencies representing Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont. The Association provides technical assistance and policy guidance to our member states on regional air pollution issues of concern to the Northeast. We appreciate this opportunity to address the Subcommittee regarding reformulated gasoline and MTBE.

As I hope you are already aware, the Northeast states have much at stake in the debate over RFG and MTBE. RFG, with or without, MTBE is one of the most significant public health achievements of the 1990 Clean Air Act. The RFG program has provided substantial reductions in smog forming emissions and has dramatically reduced emissions of benzene and other known human carcinogens found in vehicle exhaust. However, MTBE's unique mobility and resistance to biodegradation pose unacceptable risks to our region's potable ground water. Testing conducted throughout the northeast has detected low levels of MTBE in roughly fifteen percent of the drinking water sampled. MTBE's unpleasant taste and odor at higher concentrations and the frequency of MTBE detections has convinced us that MTBE use must be severely curtailed.

Fortunately, concentrations of MTBE detected in the vast majority of samples (99%) are extremely low. Compared against other gasoline constituents, the relative toxicity of MTBE is also low. These two factors lead public health experts in our region to conclude that the health threat posed by MTBE is minimal when compared against the present risk posed by other drinking water contaminants or when compared against public health benefits of the RFG program as a whole. The challenge facing us all is to mitigate the environmental and economic harms caused by MTBE contamination without sacrificing the environmental and public health benefits provided by RFG using MTBE. Unfortunately, the law as currently written prevents both EPA and the states from effectively facing this challenge. For the nine mandatory RFG areas, which in our region include parts of NY, NJ and all of CT, the Clean Air Act provides literally no opportunity for states to limit MTBE use. For areas that have joined the RFG program voluntarily, the only option available under statute is to abandon the RFG program and the benefits it provides and hope that refiners respond by reducing the MTBE content of the resulting conventional gasoline. Even this inadequate option is constrained by an EPA rulemaking that prevents states that currently participate in the RFG program from opting out until 2003.

Dissatisfied with these options, the eight Northeast states have joined together to promote a unified strategy to address the MTBE problem. The centerpiece of this strategy is a set of six legislative principles designed to protect water quality from the threat posed by MTBE, maintains the full air quality and public health benefits of the current RFG program, and ensure adequate fuel supply and price stability. These principles were announced by NESCAUM in mid January and have since been endorsed by the American Lung Association (ALA), the American Petroleum Institute (API), the Natural Resources Defense Council (NRDC) and the Sun Com-

pany. Moreover, the eight NESCAUM states have joined to date with Pennsylvania, and Delaware to form a state Task Force in support of these federal legislative principles as well as state actions to address MTBE. Allow me now to outline the principles that form the foundation of our unique alliance:

At the outset, I must note that the following principles are limited to changes that we believe must be made under the Clean Air Act. There are a host of measures to improve fuel storage, fuel handling and groundwater remediation that are under active discussion in our state task force. Some of these measures may also require changes in federal statute, however such changes are beyond the scope of what I will present today.

I. *Repeal the 2 percent oxygen mandate for RFG in the Clean Air Act*—It is simply not possible to protect air quality, water quality and ensure gasoline price stability unless the oxygen mandate is lifted or at minimum modified to require EPA to waive this requirement upon state request. Unless the oxygen requirement is lifted or waived, a substantial reduction in MTBE use creates a de facto summertime ethanol mandate. While ethanol usage is far preferable to MTBE from a groundwater perspective and promotion of ethanol can further a host of energy, agricultural, and environmental goals, an ethanol mandate in the reformulated gasoline program is not sound environmental or economic policy for our region. Due to its high volatility and resulting increase in evaporative emissions, the use of ethanol during the summertime ozone season may actually exacerbate our urban and regional smog problems.

The recent experience with rising home heating oil prices serves as a reminder of our region's sensitivity to energy price increases. The economic impact of mandating the use of ethanol in the Northeast, California and the Gulf Coast is simply unknown. Setting aside the wisdom of coupling mandates with subsidies, serious questions remain about the cost of transporting and distributing ethanol throughout regions of the country where it is not produced. There is no question that it is possible to dramatically increase ethanol production. Similarly there is no question that it is possible to ship massive quantities of ethanol to the northeast by barge, rail and truck. The question is at what cost. While our region embraces the goal of increasing renewable fuels nationally and sees great promise in the development of a biomass ethanol industry in the Northeast, we are convinced that there are policy approaches to achieve these legitimate ends that are far preferable to mandating the use of ethanol in summertime RFG.

II. *Phase down and Cap MTBE in all gasoline*—MTBE use must be severely curtailed across the entire fuel supply. Consistent with the conclusions of the Blue Ribbon Panel, NESCAUM believes that, MTBE concentrations in gasoline should be returned to the levels commonly used prior to adoption of the oxygen standard in 1990. Coupled with the substantial and ongoing improvements in underground storage tank integrity and fuel handling, we are optimistic that a fifty to seventy-five percent reduction in allowable per gallon MTBE concentrations will effectively mitigate the risk to groundwater while enabling refiners to preserve air quality gains at an acceptable cost. However, our analysis indicates that a precipitous and complete phase-out of MTBE is likely to undermine public health in our region because of the high toxicity of the economically viable alternatives to replace the volume and octane MTBE presently provides in the fuel supply. While politically attractive, a federal ban on MTBE is equally as inflexible and intrusive as the oxygen mandate. It is time to get beyond the polemics of mandates and bans and empower federal and state environmental regulators to effectively manage risk.

III. *Maintain the toxic emission benefits achieved to date by the federal RFG program*—The use of RFG with MTBE in the Northeast has produced dramatic air quality gains. Most significant have been the reductions in airborne toxics which have substantially surpassed the performance standards of both the first phase RFG requirements and substantially exceed the performance requirements of the more stringent second phase requirements that take effect this year. We believe that a substantial portion of these benefits have been provided by the high volume of oxygenates currently mandated in RFG. As we seek to provide refiners with the flexibility to reduce the use of MTBE, it is necessary to ensure that this flexibility is not used to produce higher polluting gasoline. Importantly, the American Petroleum Institute, Sunoco and other independent refiners agree. The members of our alliance are working diligently to craft legislative language that we believe accurately and equitably maintains the full air quality benefits of the present day RFG program. We hope to provide this language for the Committee's consideration within a week.

Our focus on crafting legislative language to maintain RFG toxic benefits should not be confused with a failure to appreciate the critical importance of also maintaining the full VOC and NOx reductions provided by the RFG program. However, the

Phase 2 performance requirements for these two pollutants are more aggressive than the performance of RFG to date. Hence, the EPA regulations and statute in their current form ensure that emissions of these pollutants will not increase if the oxygen standard is lifted or waived.

IV. Clarify state and federal authority to regulate, and/or eliminate, MTBE or other oxygenates if necessary to protect public health and the environment—The evidence before our states has not convinced us that a federal ban on MTBE is in the best interest of public health. However, we believe that it is critical that states and the EPA are provided with measured but clear authority to regulate and if necessary phase-out MTBE if such action is found necessary to effectively protect public health or environmental quality. At present, we fear that any prescriptive state efforts to limit MTBE use would be tied up for years in costly and counterproductive litigation. Recent suggestions that the Administration is exploring its authority to limit MTBE use under the Toxic Substances Control Act (TOSCA), does not allay our concern about the inadequacy of existing Agency authority. A cursory review of the language under TOSCA suggests that its application to the question at hand will be arduous, inelegant and almost certainly tangled in years of litigation.

The northeast states share EPA's frustration over the inadequacy of our mutual authority and applaud the Agency's efforts to leave no stone unturned. However, the issues at hand are too important to rest their outcome on a courageous interpretation of existing authority. Moreover, this approach does not empower our states to adopt more protective requirements if federal action is demonstrated inadequate to address state concerns. Balancing the desire for regional and national consistency in fuel specifications with the autonomous obligation of each state to protect its citizens and environment is not a new challenge for the Clean Air Act. We believe that the approach suggested by Congressman Greenwood in HR 3449 is consistent with the Clean Air Act's historic balancing of these competing desires and provides a sound foundation for this Committee's deliberations.

V. Promote consistency in fuel specifications through the timely implementation of effective federal requirements—As indicated previously, the Northeast states share the goal of providing fuel refiners and suppliers with a uniform set of regulatory requirements. The most effective means of achieving this consistency is to authorize and require timely action on the part of EPA. Our states are committed to working with other regions and EPA to develop a federal regulation that meets our collective needs.

VI. Provide adequate lead time for the petroleum infrastructure to adjust in order to ensure adequate fuel supply and price stability—At present, the gasoline system in the Northeast and much of the nation is dependent upon the presence of high volumes of MTBE. Much as we want immediate action to reinvigorate the RFG program, we recognize that the substantial reductions in MTBE that must occur can not be completed overnight. Depending on the ultimate extent of required reductions, our states anticipate that two to four years will be necessary to complete the phase down of MTBE in the northeast. We are committed to working with our partners in the refining industry to ensure that fuel quality, supply and price are protected as we shift from our current dependence on MTBE.

In closing, the northeast states and our partners in the refining and environmental community recognize that reconciling the diversity and intensity of interests around the table poses a considerable challenge for this Committee. Until recently, agreement among the states refining industry, environmental community and oxygenate industry have generally been limited to concurrence over the table's shape. I am greatly encouraged that three corners have joined together around a common set of principles that I believe form a sound basis for legislative action. I look forward to hearing from our partners from the Lung Association and Sunoco later today and thank the Committee for the opportunity to appear before you today.

Mr. GREENWOOD. Thank you very much, Mr. Grumet.
Mr. Milazzo, 5 minutes for your testimony.

STATEMENT OF JOHN C. MILAZZO

Mr. MILAZZO. Thank you. It is an honor to be here today; and on behalf of the Suffolk County Water Authority, I want to thank Congressman Lazio for inviting us down.

The Suffolk County Water Authority is the Nation's largest water supplier based entirely on groundwater. We serve more than a million county residents with pure, safe, constantly tested water while maintaining approximately 340,000 customer accounts. We

operate the Nation's largest and most technologically advanced groundwater testing laboratory, which was built at a cost of \$6 million and has an annual operating budget of more than \$3 million. Our laboratory is staffed by 35 chemists, microbiologists, and technicians who conducted more than 60,000 tests last year measuring more than 200 chemical constituents.

Twice per year the laboratory performs proficiency tests and submits the results to the New York State Department of Health. Only after we pass these tests are we certified by the State. We have always maintained our certification. In addition, the Department of Health reviews our quality assurance and quality control data as part of the New York State Environmental Laboratory Approval program. Furthermore, we have developed testing policies at our laboratory that have been adopted by and published by the United States EPA for use by other labs.

In our 48-year history, we have never failed to meet every water quality standard established by Federal regulation or by New York State. And New York State are among the strictest in the Nation. We will do all that is necessary to ensure that we, like the majority of public water suppliers, continue to supply water that is pure, safe and constantly tested. This is an obligation that infuses every water authority action.

Mr. Chairman, I have made mention of our laboratory, our testing, and the quality of the water that we serve because I want to assure our customers, who include our neighbors, our friends, and our own families, that the water we serve is safe. However, there is a significant cost involved in ensuring that the water we serve meets our own demanding standards. In addition to the expenses incurred in building our laboratory and the testing performed by our lab staff, there are costs associated with treating water which does not meet Federal and State drinking water standards in its raw pretreated form.

The water authority operates 479 wells across Suffolk County, drawing water from aquifers deep below the surface of Long Island. Approximately 10 percent of the wells that we operate have filtration systems which remove harmful contaminants from the raw water before it enters our system. The types of contaminants that we find in the unfiltered water of these wells includes herbicides and volatile organic compounds such as degreasers, solvents and dry cleaning fluids. Filtration systems are also used to purify water affected by the aftermath of leaking gas tanks or gasoline spills.

As the largest water supply based entirely on groundwater, we are keenly aware of the issues which affect groundwater resources. The water authority appears before this subcommittee in an effort to provide information to you as you wrestle with the difficult issue of the reformulated gasoline requirements of the Clean Air Act Amendments of 1990. Suffolk County is a non-attainment area for purposes of the 1990 amendments. Consequently, gasoline supplied in Suffolk County must meet the reformulated gasoline requirements.

To date, many gasoline suppliers have met the requirements with the use of MTBE. MTBE is problematic for the water authority because it is a highly aggressive and soluble compound that moves with relative ease through the supersaturated sands of our

federally designated sole-source aquifer system. As a testament to our commitment to serve pure, safe, and constantly tested water, the water authority began testing for MTBE more than 10 years ago, long before such testing was required by the State or Federal Government.

Unfortunately, MTBE has been detected in 105 of our drinking water wells. The maximum allowable limit of MTBE in drinking water is 50 parts per billion under New York State drinking water standards. There is currently no Federal standard. Several States, including New York, are expected to drop their drinking water standard to 10 parts per billion in the near future.

It should be pointed out that many of our detections of MTBE are extremely low levels, as low as 5 parts per billion, which is really at the border of the detection capability of the equipment we use in our lab. And these detects at that low level are seen once and not seen again. The types of these low-level detections can often be attributed to sampling anomalies and may not actually be indicative of the presence of MTBE.

Just to put things in perspective, one part per billion is equivalent to 1 second in the life of one 32-year-old. I have not had a one part per billion yet. So when we talk about zero parts per billion, we are talking about an infinitesimally small level of detection. Laboratory data from 1999 indicates that we have detected MTBE in 61 of our operational wells at levels between 0.5 and 2.5 parts per billion. Of these 61 wells, 30 had MTBE levels that were consistent between 0.5 and 2.5. The remaining detections were only once and extremely low levels as I talked about.

In addition to these 61 wells, we do have two MTBE detections at two facilities that are consistently between 6 parts per billion and 10 parts per billion. One of the sites, we suspect, is from a gasoline spill, and the other we are not quite sure of the source. The raw water from these sites is being treated with GAC filters to remove the MTBE.

MTBE presents several probables for the water authority. As previously mentioned, it is an aggressive compound. It breaks through the activated carbon of our filter systems at a rate three to four times greater than contaminants. Once breakthrough occurs, the carbon in the vessel can no longer remove MTBE, and depending on the detection level, may need changing. However, it costs almost \$40,000 to replace a carbon in one of our filters. If we have to install a GAC filter at a well, the cost would approach \$500,000.

As an organization with total annual revenues in excess of \$100 million and net assets exceeding three-quarters of a billion dollars, we can continue to filter water; and if necessary, we will expand our filtration system. Unfortunately, we have to pass those additional costs associated with the filtration on to our customers. In those instances where the source of a pollutant requiring mediation can be identified, we will, as we have successfully done in the past, aggressively pursue the polluter of our water resource through litigation.

A significant concern for the water authority, and the reason we are here today, is if the low level of detections that have been discovered represent the proverbial tip of the iceberg. If MTBE con-

tamination becomes more pervasive, and the concentrations of MTBE increase, the water authority will be forced to dedicate appreciable resources at combating the MTBE contamination at great expense to our customers. Absent a prohibition on MTBE use in Suffolk County, the potential will always exist that MTBE will continue to degrade our groundwater resources.

Given the questionable benefits to air quality of MTBE, as my colleague has spoken to, we believe and have called for the complete ban of MTBE. This position recognizes that the water served to our customers must be pure and safe. We further believe that we are at a critical crossroads. Limited contamination exists. However, we believe you have the ability to be proactive rather than reactive when dealing with the MTBE issue. Action now can limit and curtail more costly future damage. While the reformulated gasoline goals are laudable, air and water quality should not be mutually exclusive.

I want to thank you for inviting us and look forward to answering your questions.

[The prepared statement of John C. Milazzo follows:]

PREPARED STATEMENT OF JOHN C. MILAZZO, SUFFOLK COUNTY WATER AUTHORITY

The Suffolk County Water Authority is the nation's largest water supplier based entirely on groundwater. We serve more than a 1 million county residents with pure, safe, and constantly tested water while maintaining approximately 340,000 customer accounts. We operate the nation's largest and most technologically advanced groundwater testing laboratory which was built at a cost of \$6 million and has an annual operating budget of more than \$3 million. Our laboratory is staffed by 35 chemists, microbiologists, and technicians who conducted more than 60,000 tests last year, measuring more than 200 chemical constituents. Twice per year, the laboratory performs Proficiency Tests and submits the results to New York State Department of Health. Only after we pass these tests are we "certified" by the state. We have always maintained our certification. In addition, the Department of Health reviews our Quality Assurance/Quality Control Data as part of the New York State Environmental Laboratory Approval Program. Furthermore, we have developed testing methodologies at our laboratory that have been adopted by and published by the United States Environmental Protection Agency for use by other laboratories.

In our 48 year history, we have never failed to meet every water quality standard established by federal regulation or by New York State, and New York's standards are among the strictest water quality standards in the nation. We will do all that is necessary to ensure that we, like the majority of public water suppliers, continue to supply water that is pure, safe, and constantly tested. This is an obligation that infuses every Water Authority action.

Mr. Chairman, I've made mention of our laboratory, our testing, and the quality of the water we serve because I want to assure our customers, who include our neighbors, friends, and our own families that the water we serve is safe!

However, there is a significant cost involved in ensuring that the water we serve meets our demanding standards. In addition to the expenses incurred in building our laboratory and the testing performed by our laboratory staff, there are the costs associated with treating water which does not meet federal and state drinking water standards in its raw, pre-treated, form. The Water Authority operates 479 wells across Suffolk County, drawing water from aquifers deep below the surface of Long Island. Approximately 10 percent of the wells that we operate have filtration systems which remove harmful contaminants from the raw water before it enters our system. The types of contaminants that we find in the unfiltered water of these wells include herbicides and volatile organic compounds such as degreasers, solvents, and dry cleaning fluids. Filtration systems are also used to purify water affected by the aftermath of leaking gasoline tanks or gasoline spills.

As the largest water supplier based entirely on groundwater, we are keenly aware of the issues which affect groundwater resources. The Water Authority appears before this Committee in an effort to provide information to the Committee members as you wrestle with the difficult issue of the reformulated gasoline requirements of the Clean Air Act Amendments of 1990. Suffolk County is a nonattainment area for

purposes of the Clean Air Act and its 1990 Amendments. Consequently, gasoline supplied in Suffolk County must meet the reformulated gasoline requirements of the Clean Air Act as amended. To date, many gasoline suppliers have met the requirements with the use of the oxygenate methyl tertiary butyl ether (MTBE).

MTBE is problematic for the Water Authority because it is a highly aggressive and soluble compound that moves with relative ease through the super saturated sands of our federally designated Sole Source Aquifer system. Testament to our commitment to serve pure and safe water, the Water Authority began testing for MTBE more than 10 years ago, long before such testing was required. Unfortunately, MTBE has been detected in 105 of our wells since we began testing.

The maximum allowable limit of MTBE in drinking water is 50 parts per billion under New York State drinking water standards. There is currently no federal standard for MTBE. Several states, including New York, are expected to drop their respective drinking water standards to 10 parts per billion in the near future.

It should be pointed out that many of our detections of MTBE at extremely low levels (as low as 0.5 parts per billion) were seen once and were not seen again. These types of low level detections can often be attributed to sampling anomalies and may not actually be indicative of the presence of MTBE. Just to put things in perspective, Mr. Chairman, one part per billion is equivalent to one second in the life of a thirty-two (32) year old individual. So when we talk about 0.5 parts per billion, we are talking about an infinitesimal level of detection.

Laboratory data from 1999 indicates that we detected MTBE in 61 of our 425 operational wells at levels between 0.5 and 2.5 parts per billion. Of these 61 wells, 30 wells had MTBE that showed consistent levels at 0.5 to 2.5 parts per billion. The remaining wells had detections only once, at extremely low levels of 0.5 parts per billion. In addition to these 61 wells, we did have ongoing MTBE detections at our Edgemere pump station at Montauk Point, at levels between 6 and 10 parts per billion. It is suspected that the source of this contamination was from a nearby firehouse. Another continuous detection in 1999 was at a well at our Wheeler Road facility, located in the Hauppauge area, where readings of MTBE were between 5 and 10 parts per billion. The raw water at these sites is being treated with granular activated carbon filtration (GAC) systems.

MTBE presents several problems for the Water Authority. As previously mentioned, MTBE is an aggressive compound. It breaks through the activated charcoal medium in our filtration systems at a rate three to four times greater than other contaminants. Once breakthrough occurs, the carbon in the vessel can no longer remove MTBE and thus depending on the detection level may require changing. However, it costs approximately \$40,000 to refill a GAC vessel. The cost of installing a GAC vessel for a single well approaches \$500,000. As an organization with total annual revenues in excess of \$100 million and with net assets exceeding three quarters of a billion dollars, the Water Authority has the resources to continue filtering water, and, if necessary, to expand its filtration systems. But, as we are a not-for-profit, public benefit corporation, any additional costs associated with the filtration must be borne by our customers. In those instances where the source of a pollutant requiring remediation can be identified, we will, as we have successfully done in the past, aggressively pursue the polluter of our water resource through litigation.

A significant concern for the Water Authority is if the low level detections that have been discovered represent the proverbial "tip of the iceberg." If MTBE contamination becomes more pervasive and the concentrations of MTBE increase, the Water Authority will be forced to dedicate appreciable resources to combating MTBE contamination at a great expense to our customers. Absent a prohibition on the use of MTBE in Suffolk County, the potential will always exist that MTBE will continue to degrade our water resources. Given the questionable benefits to air quality of MTBE, we believe in and have called for the ban of MTBE. This position recognizes that the water served to our customers must be pure and safe. We further believe that we are at a critical crossroads; while limited contamination exists, we believe you have the ability to be pro-active rather than reactive in dealing with the MTBE issue. Action now, can limit and curtail more costly future damage. While the reformulated gasoline goals are laudable, air quality and water quality should not be mutually exclusive!

In closing, I want to thank the Chairman of the Subcommittee for inviting the Water Authority to provide our perspective of the MTBE issue.

Mr. GREENWOOD. Thank you, Mr. Milazzo.

I will recognize myself for 5 minutes of questioning and turn my first question to Mr. Grumet.

In your testimony you raised the issue of uniformity fuel specifications. Uniformity of fuel specifications would prevent suppliers from having to make many different types of fuels for different States.

The question is do you think that fuel consistency should occur at the regional or national level?

Mr. GRUMET. In this area more consistency is always a good thing. But at the same time we have to recognize the regional differences and the autonomous obligation of each State to protect their environment and their public health.

The Clean Air Act has tried to balance that and I think has done a decent job of requiring a reasonable high hurdle for States to have to surpass in order to come up with the unique regulatory approaches. On this issue in particular, I think regional approaches make a lot of sense.

As a regional organization, we are committed in the Northeast to ensuring, to the greatest extent possible, a consistent approach with fuel regulation. There is only one area where I could see the need for anything that was not uniform across the Nation, and that is with regard to maintaining the full air quality benefits of the program, because the air quality benefits of the program have been different in different parts of the country.

In the northeast, we have achieved the most substantial air toxic reductions. And if we are going to maintain those reductions, we will need to bring the air toxic benefits of the program up in the rest of the country. That will cost some money. If we are not willing to do that, we may need to have some kind of regional bifurcation that recognizes the substantial air quality and toxic reductions.

Mr. GREENWOOD. I know this is a question that is not easy to answer, but what is your sense of the size of a region? When we try to balance the desire for regional flexibility with uniformity we have to have some sense of how many pieces to cut.

Mr. GRUMET. It strikes me there are two or three pieces on two issues. You have a choice, in my mind, to either proactively lift the oxygen mandate across the entire Nation or you have the choice of requiring EPA to grant States waivers of the oxygen mandate. If you took the latter approach, I imagine we would see two regions. We would see a region of the Midwest, represented by my colleague to the right, who is very confident that the current situation works, and would probably not seek, I imagine, to act on that waiver. And you would see a region of everybody else that I expect would very quickly seek to act.

On the area of air quality, I also see two regions, because the Midwest, for a host of reasons I will not get into, has not had as substantial toxic benefits under this program as the rest of the country. So you may need to carve out a different standard for the Midwest than for everybody else.

Mr. GREENWOOD. Thank you. Let me ask Mr. Skinner a question.

Your statement indicates that Chicago may be "forced" to start using MTBE as an oxygenate. Your statement also later explains that phase II of the RFG program will require a more expensive gasoline blend stock due to low volatility limits in phase II. Is this the only factor that you believe will force the use of MTBE?

Mr. SKINNER. Yes. As of right now we believe it is the only factor.

And when I say Chicago is going to be forced to see more MTBE, forced may be the wrong word. We are being forced, the producers are not being forced to use MTBE. They are choosing to use MTBE because of the lower cost of mixing it with a higher blend stock, higher volatility gasoline. It is a choice not to go to the more expensive lower volatility route.

Mr. GREENWOOD. It is economically driven phenomena?

Mr. SKINNER. Yes.

Mr. GREENWOOD. Let me ask you this question. We are informed that the Department of Energy estimates that the cost impact of utilizing ethanol phase II of the RFG program is about 1 cent per gallon of RFG under current regulations. Do you believe this 1 cent per gallon differential is in fact substantial enough to force the introduction of MTBEs? Is that the order of magnitude we are talking about here?

Mr. SKINNER. Well, I think the estimates have varied. I have heard 1 cent, I have heard 2 to 4 cents. But, at any rate, when you calculate it over hundreds, millions, billions of gallons of gasoline, it does add up. So it is a significant economic factor, I think.

Mr. GREENWOOD. You mentioned Illinois has found detections of MTBE in 26 public water supplies. Can you tell us the extent of this contamination and what steps the Illinois EPA or the water systems themselves have taken to address this contamination?

Mr. SKINNER. Well, the local water systems are probably not in the best position to do much about these sort of hits. They try to trace it to the source. A lot of time it is leaking underground storage tanks. Sometimes it is a source that cannot be traced, whether it is vehicles, boats, whatever.

We are formulating currently in Illinois drinking water standards for MTBE. We have the regulations proposed and hopefully within the next few months it will make it through the process so that we have some mechanism for enforcing on our public water supply standards and taking the wells out of service whenever necessary. But we are bound somewhat in terms of an overall MTBE solution by what I would refer to as Federal preemption. Its role in the Federal air program limits what we can do unilaterally as a State.

Now, it may come to the point where Illinois, as other States have, chooses to proceed and essentially risk a legal battle because the MTBE problem has become so serious. We have not quite gotten there yet.

Mr. GREENWOOD. Without objection, I would like to at this time submit for the record a Department of Energy study of June 14, 1999 on the impact of phase II gasoline reformulation requirements and the cost of using ethanol in PADD II. Without objection, it will be entered into the record.

[The information referred to follows:]

June 14, 1999

To: Barry McNutt (DOE)
Debbie Wood (EPA)
Lester Wybomy (EPA)

From: Jerry Hadder (ORNL)

Subject: Impact of Phase 2 Gasoline Reformulation Requirements on the Cost of Using Ethanol in PADD II

The stricter requirements for emissions of Volatile Organic Compounds (VOC, volatility requirements) for Phase 2 reformulated gasoline (RFG) could increase the cost of using higher vapor pressure hydrocarbon components and ethanol. The Environmental Protection Agency (EPA) needs refinery investment and cost data which would allow estimation of the cost to satisfy volatility requirements in Phase 2 RFG versus Phase 1 RFG, both RFGs using ethanol as the oxygenate.

The ratio-free version of the Oak Ridge National Laboratory Refinery Yield Model (ORNL-RYM) has been used to study the cost impact on ethanol use in gasoline blending, due to the transition from Phase 1 to Phase 2 RFG in the U.S. Midwest (Petroleum Administration for Defense District II, or PADD II). Premises for the study are discussed in the attached Scenario Document. The three study cases are:

- Case 1. Phase 1 RFG
- Case 2. Phase 2 RFG
- Case 3. Phase 1 RFG, with RVP/volatility reduced to Phase 2 level.

RFGs satisfy specifications for VOC, Nitrogen Oxides (NOx), and Toxic Air Pollutants (TAP). VOC, NOx, and TAP are functions of the values of several gasoline properties. Among other changes relative to Phase 1, Phase 2 RFG will be lower in RVP and sulfur. The RVP reduction is driven largely by the stricter VOC requirement for Phase 2 RFG. The sulfur reduction is driven by the stricter NOx and TAP requirements for Phase 2 RFG. However, a sulfur reduction also contributes to a VOC reduction.

At the same ethanol concentrations in both Phase 1 and Phase 2 RFG, the cost impact for ethanol use in Phase 2 RFG should be only for reduction of RVP, after other Phase 2 changes have been accounted for. Therefore, the ethanol cost impact has been estimated by determining the RVP in Case 2 (Phase 2); this is the RVP required after the effects of other property changes (e.g., sulfur reduction) have been accounted for. Then Phase 1 RFG (Case 3) was analyzed with the more restrictive RVP of Phase 2 RFG (also with the appropriate maximum allowable VOC specification).

The cost impact for ethanol use in Phase 2 RFG was derived by comparing Case 3 to Case 1. Table 2 shows that the cost impact is about 1 cent per gallon of RFG (or 9.6 cents per gallon of ethanol).

In a comparison of RFG blendstocks for Case 3 versus Case 1, Table 4 shows a substantial increase in reformate, due, in part, to its attractive RVP. There are substantial decreases in higher-RVP butane, FCC naphthas, alkylate, polymer gasolines, and dimate. Reformate is also very low in sulfur, contributing to a reduction in RFG sulfur in Case 3 (see Table 3).

For Cases 1 and 3, the gasoline pool sulfur contents are 380 ppm (actual pool sulfur content was about 340 ppm in 1996, per API/NPRA 1997), and pool olefin contents are 14 percent (actual pool olefins content was about 11 percent in 1996). The higher model values for gasoline pool sulfur and olefins are due to higher percentages (35 to 36 percent) of FCC naphtha blendstocks (actual FCC naphtha blendstocks were 24 percent in 1996).

However, the model values for RFG sulfur content (80 to 100 ppm) are much lower than reported actual 1996 sulfur contents (400 ppm). Lower sulfur contents are required, in part, to offset NOx emissions due to higher olefins content (19 percent) than reported actual 1996 olefins contents for RFG (10 percent).

For the pool as a whole, Table 5 suggests that RVP reduction is achieved by modest reduction in butane and straight run naphthas, with small increases in reformate, alkylate, and C5/C6 isomate. Table 8 shows investment for converting butane into feed for increased alkylation capacity. Table 8 also indicates investment in hydrocracker capacity for Case 2 (Phase 2). In Phase 2, RFG is using more low-sulfur, high aromatics/benzene reformates. The marginal cost of benzene reduction is high, causing a higher cost of toxics reduction in the conventional gasolines (CG) [See Note 1]. Hydrocrackates have low toxicity blending values, in addition to low volatility blending values. Therefore, the hydrocracker investment is related to both toxicity and volatility benefits [See Note 2].

Other key modeling results are shown in attached tables which summarize overall refining cost changes, gasoline properties, blendstocks, refinery volume balances, hydrogen balances, investments, operating and investment cost changes, and crude oil qualities.

Results could be sensitive to the premised production share for RFG. This study assumes that RFG production is shared equally by all refineries in PADD II. If a smaller number of *similar-capability* refineries produced a higher share of RFG, then there could be a higher cost impact for ethanol in the transition to Phase 2 RFG. However, the smaller group of refineries would be expected to have capability and economic advantages in producing RFG with ethanol, with some mitigation of cost impacts.

Appendix A contains petroleum industry comments and responses for this study.

[Note 1: Actually, the marginal value of benzene reduction is low, because the premised revenue for benzene is lower than the marginal cost of producing benzene.]

[Note 2: An EPA review points out that EPA's current methodology for amortizing (or socializing) capital cost is based on a 7 percent rate of return on investment (ROI) and no taxes. The capital amortization factor, based on this methodology, is 0.11. The capital amortization factor which ORNL uses, based on a 10 percent ROI, is 0.17. The adjusted cents per gallon cost based on the current EPA methodology is 0.82 cents per gallon.]

TRANSPORTATION FUELS AND EFFICIENCY**ESTIMATING IMPACTS OF PHASE 2
GASOLINE REFORMULATION ON THE
VALUE OF ETHANOL****SCENARIO DOCUMENT**Task No. TBDAuthor G.R. HadderDate 3/17/99**PURPOSE:**

This Scenario Document defines assumptions for estimating the cost increase for using ethanol in Phase 2 reformulated gasoline (RFG), relative to the cost of using ethanol in Phase 1 RFG.

BACKGROUND:

The stricter volatility requirements for Phase 2 RFG could increase the cost of using higher vapor pressure hydrocarbon components and ethanol. EPA needs refinery investment and cost data which would allow estimation of the economic impacts of Phase 2 RFG on the use of ethanol in gasoline blending.

To estimate the refining and cost impacts of a variety of changes in gasoline and diesel fuel specifications, EPA has established an Interagency Agreement with the Department of Energy (DOE), Office of Policy. The Office has considerable experience in directing the analysis of control of gasoline quality. DOE's interest in gasoline and diesel fuel quality regulations is to ensure that cost-effective programs to achieve necessary environmental goals are developed without adversely affecting the efficiency and reliability of the gasoline production and distribution system (DOE, 1994).

In support of DOE and EPA, under the Interagency Agreement, Oak Ridge National Laboratory (ORNL) will use the ORNL Refinery Yield Model (ORNL-RYM) to estimate refining and ethanol cost impacts.

MODEL 1999 ratio-free version of ORNL-RYM with new naphtha desulfurization technologies and other updates. ORNL-RYM is a linear program representing 50 refining processes (including the OCTGAIN and CDTECH processes for desulfurization of FCC naphtha) which can be used to produce 40 different products from more than 100 crude oils. An investment module provides for the addition of processing capacity (DOE 1984a, 1984b; Tallett and Dunbar, 1988; Tallett, Dunbar and Leather, 1992). ORNL-RYM tracks octane, Reid vapor pressure (RVP), oxygen content, sulfur, benzene, aromatics, total olefins, distillation points, and pollutant emissions on all gasoline component streams. In separate data tables in ORNL-RYM, gasoline blending components are identified; blending values are assigned to these components; and blending targets are set. Properties for distillates and jet fuels are handled in a similar fashion. ORNL-RYM incorporates gasoline blending to satisfy formula and emissions standards mandated by the Clean Air Act Amendments of 1990 and described by the EPA Complex Model, which predicts pollutant emissions in terms of gasoline properties (Korotney, 1993).

Overoptimization can occur as a result of ORNL-RYM's use of a modeling concept in which refinery streams with identical distillation cut points are kept separate through different refining processes. Ratio

constraints on refinery streams can be used to avoid unrealistic separation of streams with identical distillation cut points. With ratio constraints, the proportions of streams entering a process are constrained to equal the proportions of those streams produced at a source process. However, it has been demonstrated that the use of ratio constraints in regional refinery modeling can over-correct the stream separation problem - thereby underoptimizing refinery operations (Hadder, 1997a).

It is important to recognize that refineries within a region can vary widely in technical capability, and that refineries are subject to temporal variations in complex operations. Refining costs span a range, and this range has uncertainty. Given variations, uncertainties, and over/underoptimization possibilities, DOE has concluded that both ratio-free and ratio-constrained versions of ORNL-RYM can provide plausible estimates of the range of refining costs:

STUDY SEASON AND YEAR: Summer. Comparable market conditions (for year 2004) will be used for both Phase 1 and Phase 2 scenarios. The year 2004 was selected because market data sets for this year have been recently developed and tested with ORNL-RYM. Because comparisons are between cases, the premised year will not make a significant difference in results, versus other another year.

GEOGRAPHIC AREAS: PADD II (US Midwest). PADD II has the greatest use of ethanol in gasoline production. The RFG production share is about 12 percent of total gasoline production in PADD II.

PREMISES:

Refinery Production Rates -

Refinery net annual production rates from the *Petroleum Supply Annual 1998* (DOE, 1998c) will be adjusted by the summer seasonal swing factors developed in the National Petroleum Council study of gasoline reformulation (NPC, 1993).

Refinery production will be projected to year 2004, using the Reference Case growth rates published in Table A11 of the *Annual Energy Outlook 1999* (DOE, 1998a).

The model will represent production of three gasoline pools:

CG with or without ethers.

CG with 10 percent ethanol (equivalently, subgrade CG for downstream blending with ethanol).

Reformulated gasoline (RFG) with 10 percent ethanol (equivalently, subgrade RFG for downstream blending with ethanol).

Gasolines will be pooled to combine volumes and properties of regular, mid-grade, and premium grades. The basis for pooling will be the *NPRA Survey of U.S. Gasoline Quality and U.S. Refining Industry Capacity to Produce Reformulated Gasolines* (NPRA, 1991).

The production shares of reformulated gasoline will be based on summer-month (May through September) production shares reported in the *Petroleum Supply Annual 1997* (DOE, 1998c).

RFG will satisfy federal recipe and emissions performance requirements as summarized in Table 1.

CG will satisfy requirements for Phase II RVP volatility control and antidumping.

Gasolines properties will be weighted to reflect the Class splits assumed in the National Petroleum Council study of *U.S. Petroleum Refining* (NPC, 1993). Class splits account for differences in properties of gasolines produced for consumers in different climatic regions

For ether-containing conventional gasolines the refinery model will be restricted to use only MTBE produced internally from current PADD II ether plant capacity.

There will be no minimum constraint on butane blended to gasoline.

Specifications for products other than gasoline will be based on NPC (1993).

Refinery Raw Material Rates -

Refinery inputs of crude oil and raw materials will be based on *Petroleum Supply Annual* (DOE, 1998c).

Refinery inputs will be projected from 1997 to year 2004, using the Reference Case growth rates published in Table A11 of the *Annual Energy Outlook 1999* (DOE, 1998a).

The crude oil mix will be based on the regional mixes reported by NPC (1993).

Refinery Capacity and Investment -

Refinery capacity will be based on in-place capacity and construction as reported in the *Petroleum Supply Annual 1996* (DOE 1997b), NPC (1993), NPRA (1991), the *Oil & Gas Journal* (Radler, 1997 and 1998), and American Petroleum Institute and NPRA (API/NPRA, 1997). Capacities for reformate splitter, FCC naphtha splitter, and straight run naphtha splitter will be set at the greater of capacity reported in NPRA (1991) or NPC (1993).

Refinery capacity for recovery of hydrogen (i.e., the factor for loss of hydrogen to fuel gas) will be based on API/NPRA (1997).

Process capacity investment will be based on a 15 percent discounted cash flow rate of return on investment (R.I.), and actual investment costs will be based on a 10 percent R.I. For existing capacity, typical investment costs will be used for up to 20 percent expansion in capacity. For capacity greater than the defined expansion limit, investment is subject to economies of scale, according to the "six-tenths factor" relationship:

$$\text{CostNew} = (\text{CapacityNew}/\text{CapacityTypical Size})^n * \text{CostTypical Size}, \text{ with } n \text{ between } 0.6 \text{ and } 0.7$$

New capacity will be averaged over (25) refineries in the region with gasoline sulfur level greater than 70 ppm in 1997 (based on EPA RFG data base).

Investment options will include long-established and widely used technologies, plus the more recently developed FCC naphtha desulfurization processes, such as OCTGAIN and CDTECH. CDTECH operating costs will be the latest provided by the licensor (as of the date of this Scenario Document: 12/15/98).

Additional investment in ether plants will not be allowed.

Product Revenue and Raw Material Costs -

Revenues and costs will be expressed in 1997 dollars.

Raw material and crude oil costs will be based on the *Annual Energy Outlook 1999* (DOE, 1998a), NPC (1993) and *Petroleum Marketing Annual* (DOE, 1998b).

Product prices will be based on the *Annual Energy Outlook 1999* (DOE, 1998a), *Petroleum Marketing Annual* (DOE, 1998b), historical price differentials, price ratios, heating values, and estimates reported by NPC (1993).

STUDY CASES:

The ratio-free version of ORNL-RYM will be used to examine the impacts on ethanol use and costs in gasoline blending, due to the transition from Phase 1 to Phase 2 RFG. The three cases are:

- Case 1. Phase 1 RFG
- Case 2. Phase 2 RFG
- Case 3. Phase 1 RFG, with RVP/volatility reduced to Phase 2 level.

RFGs satisfy specifications for Volatile Organic Compounds (VOC), Nitrogen Oxides (NO_x), and Toxic Air Pollutants (TAP). VOC, NO_x, and TAP are functions of the values of several gasoline properties. Among other changes relative to Phase 1, Phase 2 RFG will be lower in RVP and sulfur. The RVP reduction is driven largely by the stricter VOC requirement for Phase 2 RFG. The sulfur reduction is driven largely by the stricter NO_x requirement for Phase 2 RFG. However, a sulfur reduction also contributes to a VOC reduction.

At the same ethanol concentration in both Phase 1 and Phase 2, the cost impact for ethanol use in Phase 2 RFG should be only for reduction of RVP, after other Phase 2 changes have been accounted for. Therefore, the ethanol cost impact will be estimated by determining the RVP in Case 2 (Phase 2); this is the RVP required after the effects of other property changes (e.g., sulfur reduction) have been accounted for. Then Phase 1 RFG (Case 3) will be analyzed with the more restrictive RVP of Phase 2 RFG (also with maximum VOC adjusted accordingly).

The cost impact for ethanol use in Phase 2 RFG will be derived by comparing Case 3 to Case 1.

METHODOLOGY:

The ORNL-RYM analysis will focus on refinery cost changes, gasoline blend stocks, gasoline properties, crude oil quality, and process capacity investment. Gasoline production will be adjusted to provide constant mileage service, but cost changes will not account for the consumer fuel economy effect.

Table 1. Formula and emissions performance standards for the federal RFG program		
Standard	Phase I CAA standards (beginning January 1, 1995)	Phase II Environmental Protection Agency final rule standards (Beginning January 1, 2000)
Oxygen content	2 wt percent minimum (averaging is allowed, with a 2.1 wt percent minimum)	
Benzene content	1 vol percent maximum	
Additives	No additives with heavy metals	
Volatile Organic Compounds (VOCs include all oxygenated and non-oxygenated hydrocarbons except methane and ethane)	Must be reduced by at least 15 percent during the summer high-ozone season, compared with the calculated VOC emissions from use of the statutory baseline gasoline.	Must be reduced during summer by 25.9 percent on a per-gallon basis or by 27.4 percent on an averaged basis.* Greater reduction is required in southern states.
Toxic Air Pollutants (TAPs consist of benzene, 1,3 butadiene, formaldehyde, acetaldehyde, and polycyclic organic matter)	Must be reduced by at least 15 percent during the entire year, compared with the calculated TAP emissions from the use of the statutory baseline gasoline.	Must be reduced year-round by 20 percent on a per-gallon basis or by 21.5 percent on an averaged basis.
Nitrogen Oxides (NOx)	Must not increase on a per-gallon basis. Must be reduced by at least 1.5 percent, on average, during the entire year compared with the calculated NOx emissions from the use of the statutory baseline gasoline.	Must be reduced during summer by 5.5 percent on a per-gallon basis or by 6.8 percent on an averaged basis. Must not increase during winter on a per-gallon basis and must be reduced by 1.5 percent on an averaged basis.
*For the per-gallon standard, every batch of RFG produced at the refinery must meet the same emissions-performance requirements. For the averaged standard, different batches may vary within limits, as long as the refinery's total RFG output meets the specified average emissions performance requirement.		

REFERENCES:

- American Petroleum Institute and National Petroleum Refiners Association (API/NPRA). 1997. 1996 *American Petroleum Institute/National Petroleum Refiners Association Survey of Refining Operations and Product Quality*. API Publishing Services, 1220 L. Street, N.W., Washington DC, July.
- Hadder, G.R. 1997a. *Re-estimation of the Refining Cost of Reformulated Gasoline NOx Control*, draft report, Oak Ridge National Laboratory, Oak Ridge, TN, February 26.
- Korotney, D. 1993. "Revised Complex Model for Conventional and Reformulated Gasoline," EPA Air Docket A-92-12, Environmental Protection Agency, Fuels and Standards Branch, Ann Arbor MI.
- National Petroleum Council (NPC). 1993. *U.S. Petroleum Refining*, Washington, DC, August.
- National Petroleum Refiners Association (NPRA). 1991. *NPRA Survey of U.S. Gasoline Quality and U.S. Refining Industry Capacity to Produce Reformulated Gasolines*. Part A, Suite 1000, 1899 L Street, NW, Washington, DC, January.
- Radler, Marilyn. 1997. "1997 Worldwide Refining Survey," *Oil & Gas Journal*, December 22.
- Radler, Marilyn. 1998. "Worldwide Construction," *Oil & Gas Journal*, April 13 and October 5.
- Tallett, M.R., and D.N. Dunbar. 1988. *Enhancement of EIA Refinery Yield Model: Extension and Demonstration on Gasoline and Diesel Quality Issues*, Oak Ridge National Laboratory Contract No. DE-AC05-84OR21400, EnSys Energy & Systems, Inc., Flemington, NJ, August.
- Tallett, M.R., D.N. Dunbar, and J. Leather. 1992. Summary Documentation of Oak Ridge Refinery Yield Model Reformulated Gasoline Update. EnSys Energy & Systems, Inc., Flemington, NJ, March 16.
- U.S. Department of Energy (DOE). 1984a. *Refinery Evaluation Modeling System (REMS) Documentation*, DOE/EIA-0460, Energy Information Administration, Washington, DC, October.
- U.S. Department of Energy (DOE). 1984b. *Refinery Evaluation Modeling System (REMS) Documentation*, DOE/EIA-0461, Energy Information Administration, Washington, DC, October.
- U.S. Department of Energy (DOE). 1994. Estimating the Costs and Effects of Reformulated Gasolines, DOE/PO-0030, Washington, DC, December.
- U.S. Environmental Protection Agency (EPA). 1994. "Regulation of Fuel and Fuel Additives: Standards for Reformulated Gasoline: Final Rulemaking," *Federal Register*, 7716-7878, February 16, 97-41, Washington, DC, March.
- U.S. Department of Energy (DOE), Energy Information Administration. 1998a. *Annual Energy Outlook 1999*, DOE/EIA-0383(99), Washington, DC, December.
- U.S. Department of Energy (DOE), Energy Information Administration. 1998b. *Petroleum Marketing Annual*, DOE/EIA-0380(98), http://www.eia.doe.gov/oil_gas/petroleum/pet_frame.html, Washington, DC.
- U.S. Department of Energy (DOE), Energy Information Administration. 1998c. *Petroleum Supply Annual 1996*, DOE/EIA-0340(98)/1 and 2, http://www.eia.doe.gov/oil_gas/petroleum/pet_frame.html, Washington, DC.

Table 2. PADD II Ratio-free model results
Ethanol study/ratio-free model

	Case 1: Phase I RFG	Case 3: Phase I RFG, with RVP/volatility reduced to Phase 2 level.
Objective function value, M\$/day	16986.665	16875.751
RFG volume, MBD	275.281	
CG volume, MBD	1853.051	
Cost allocation volume, MBD	275.281	
Ethanol cost impact, cents per gallon of RFG (10 percent ROI)		0.96

Table 3. Properties of gasolines produced by PADD II refineries
Ethanol study/ratio-free model

	Case					
	Case 1: Phase 1 RFG			Case 2: Phase 2 RFG		
	RFG	CG		RFG	CG	
	With ethanol	With ethers	With ethanol	With ethanol	With ethers	With ethanol
Volume, MBD	275	1128	725	275	1392	452
Octane, (R+M)/2	88.2	88.4	88.2	88.2	88.2	88.2
RVP, psi	8.4	8.4	9.4	7.1	8.4	9.4
Aromatics, vol %	24.4	29.5	24.9	26.0	27.8	26.8
Benzene, vol %	95	2.1	1.9	95	2.1	2.0
Olefins, vol %	19.0	16.3	8.6	13.8	15.7	10.2
Sulfur, ppm	100	287	628	86	337	551
E200, %	59.7	57.3	59.7	59.7	51.4	59.7
E300, %	85.3	83.3	88.8	86.2	82.7	90.6
Oxygen, wt %	3.70	0.20	3.71	3.68	0.16	3.71
Specific gravity	.7474	.7375	.7490	.7535	.7361	.7480
Summer TAP, mg/mi	64.8	88.8*	88.8*	62.9	88.8*	88.7*
NOx, mg/mi	1320*	1399*	1399*	1249*	1399*	1400*
VOC, mg/mi	1200*	1267	1521	1021*	1286	1506

*Binding emissions constraint

Table 3 (continued). Properties of gasolines produced by PADD II refineries Ethanol study/ratio-free model			
	Case		
	Case 3. Phase 1 RFG. with RVP/volatility reduced to Phase 2 level.		
	RFG	CG	
	With ethanol	With ethers	With ethanol
Volume, MBD	275	1128	725
Octane, (R+M)/2	88.2	88.2	88.7
RVP, psi	7.1	8.4	9.4
Aromatics, vol %	30.1	28.0	24.6
Benzene, vol %	.95	2.2	1.9
Olefins, vol %	19.0	16.5	8.6
Sulfur, ppm	83	290	637
E200, %	59.7	56.3	59.7
E300, %	86.8	82.9	89.3
Oxygen, wt %	3.65	0.20	3.70
Specific gravity	.7587	.7348	.7492
Summer TAP, mg/mi	65.6	88.8 ^a	88.8 ^a
NOx, mg/mi	1319 ^a	1399 ^a	1400 ^a
VOC, mg/mi	1017	1266	1523
^a Binding emissions constraint			

Table 4. Blendstocks for gasolines produced by PADD II refineries
Ethanol study/ratio-free model

	Case					
	Case 1: Phase 1 RFG			Case 2: Phase 2 RFG		
	RFG	CG		RFG	CG	
	With ethanol	With ethers	With ethanol	With ethanol	With ethers	With ethanol
Butane	2.1	1.1	3.9		1.5	3.8
Reformate	29.1	24.7	27.5	34.9	24.6	24.3
Straight run naphtha		8.3	8.6		5.5	8.2
C5+ isomerate	10.5	4.9		16.7	5.5	
FCC naphtha	34.5	40.9	27.1	26.2	42.6	22.8
Desulfurized FCC naphtha						
Coker naphtha		1.8	1.1		0.3	5.1
Hydrocrackate		5.8	8.4		6.4	13.7
Alkylate	13.4	9.9	13.2	10.9	12.6	10.2
Polymer gasolines		1.0				2.4
Dimate		0.4		1.8		
MTBE		1.1			0.9	
TAME						
Natural gasoline						
Pyrolysis gasoline						
Ethanol	10.0		10.0	10.0		10.0

Table 4 (continued). Blendstocks for gasolines
produced by PADD II refineries
Ethanol study/ratio-free model

	Case		
	Case 3. Phase 1 RFG, with RVP/volatility reduced to Phase 2 level.		
	RFG	CG	
	With ethanol	With ethers	With ethanol
Butane	0.7	0.8	3.7
Reformate	38.5	19.7	31.7
Straight run naphtha		9.1	6.6
C5+ isomerate	11.6	5.0	
FCC naphtha	26.5	45.3	23.6
Desulfurized FCC naphtha			
Coker naphtha		0.9	2.5
Hydrocrackate		5.8	8.4
Alkylate	6.5	12.2	13.2
Polymer gasolines	4.0		
Dimate	1.8		
MTBE		1.1	
TAME			
Natural gasoline			
Pyrolysis gasoline			
Ethanol	10.0		10.0

Table 5. Pooled gasoline blendstocks in PADD II refineries (percent) Ethanol study/ratio-free model			
Blendstock	Case		
	Case 1: Phase 1 RFG	Case 2: Phase 2 RFG	Case 3: Phase 1 RFG, with RVP/volatility reduced to Phase 2 level.
Butane	2.2	1.8	1.8
Reformate	26.2	25.9	26.4
Straight run naphtha	7.3	5.3	7.1
C5+ isomerate	3.9	5.8	4.1
FCC naphtha	35.4	36.1	35.5
Coker naphtha	1.3	1.3	1.3
Hydrocrackate	6.0	7.1	6.0
Alkylate	11.6	11.9	11.8
Polymer gasolines	0.5	0.5	0.5
Dimate	0.2	0.2	0.2
MTBE	0.6	0.6	0.6
TAME			
Natural gasoline			
Pyrolysis gasoline			
Ethanol	4.6	3.4	4.7

Table 6. Refinery volume balance for PADD II (Thousand barrels per day)			
Ethanol study/ratio-free model/ratio-free model			
	Case		
	Case 1: Phase 1 RFG	Case 2: Phase 2 RFG	Case 3: Phase 1 RFG, with RVP/volatility reduced to Phase 2 level.
Purchased inputs:			
Crude oils	3712.0	3712.0	3712.0
Ethanol	100.0	72.7	100.0
Methanol	4.2	4.2	4.2
MTBE	0.0	0.0	0.0
Other raw materials	108.2	109.5	108.3
Total purchased inputs	3924.4	3898.4	3924.5
Total products	3983.8	3969.8	3982.0

Table 7. Hydrogen balance for PADD II refineries Ethanol study/ratio-free model/ratio-free model Fuel oil equivalent barrels of hydrogen per day (minus sign indicates consumption)			
Process	Case		
	Case 1: Phase 1 RFG	Case 2: Phase 2 RFG	Case 3: Phase 1 RFG with RVP/volatility reduced to Phase 2 level.
Naphtha hydrotreating	-1972	-2085	-1979
Distillate desulfurization	-10141	-10232	-10144
FCC feed hydrofining	-7642	-8512	-7700
Gas oil hydrocracking	-28138	-32486	-28090
Reforming	+28733	+28538	+28652
C4 isomerization	-95	-93	-101
C5/C6 isomerization	-175	-254	-181
Ether production	-97	-97	-97
Hydrogen production	+28145	+33781	+28236
Hydrogen to fuel and losses	-8620	-8562	-8595

Table 8. Process capacity additions in PADD II refineries (MBD)* Ethanol study/ratio-free model/ratio-free model (Reference capacity is for January 1, 1998)			
Process	Case		
	Case 1: Phase 1 RFG (Sunk)	Case 2: Phase 2 RFG (Relative to Case 1 Sunk)	Case 3: Phase 1 RFG, with RVP/volatility reduced to Phase 2 level. (Relative to Case 1 Sunk)
Crude distillation	212		
Solvent deasphalting	26		
Visbreaker	9		
Merox	14		
Hydrocracker	33	+39	
Distillate hydrotreating	163		
Distillate fractionation	4		
Fluid catalytic cracker (FCC)	244		
FCC naphtha distillation	68		+3
Alkylation feed treatment	83		
Alkylation	5	+6	+6
Butane isomerization			+3
Hydrogen plant	7	+6	+09
Sulfur plant, short tons per day	0.7	+0.3	
*Investment decisions are based on a 15 percent discounted cash flow return on investment.			

Table 9. Cost of process capacity additions in PADD II refineries (\$MM)*
 Ethanol study/ratio-free model/ratio-free model
 (Reference capacity is for January 1, 1998)

Process	Case		
	Case 1: Phase 1 RFG (Sunk)	Case 2: Phase 2 RFG (Relative to Case 1 Sunk)	Case 3: Phase 1 RFG, with RVP/volatility reduced to Phase 2 level. (Relative to Case 1 Sunk)
Crude distillation	370		
Solvent deasphalting	66		
Visbreaker	16		
Merox	20		
Hydrocracker	253	+303	
Distillate hydrotreating	1080		
Distillate fractionation	0.4		
Fluid catalytic cracker (FCC)	1234		
FCC naphtha distillation	161		+6
Alkylation feed treatment	39		
Alkylation	39	+41	+42
Butane isomerization			+35
Hydrogen plant	497	+217	+6
Sulfur plant, short tons per day	185	+76	
Land, buildings, catalyst, chemical, spares, environmental, other	428	+57	+9
Total	4388	+694	+98
*Investment decisions are based on a 15 percent discounted cash flow return on investment.			

Table 10. Operating and investment cost change in PADD II refineries (\$M per day) Ethanol study/ratio-free model/ratio-free model (Cost change relative to Case 1: Phase 1 RFG)	
	Case 3. Phase 1 RFG, with RVP/volatility reduced to Phase 2 level
Capital charge	+46
Variable operating cost	+18
Fixed operating cost	+16
Total operating and investment cost change (10 percent ROI)	+80
Total operating and investment cost change (10 percent ROI). cents per gallon of RFG gasoline (does not include components of cost due to product/feedstock changes)	+0.7

Table 11. Quality of crude oil processed in PADD II refineries
Ethanol study/ratio-free model/ratio-free model

Property	Case		
	Case 1: Phase 1 RFG	Case 2: Phase 2 RFG	Case 3: Phase 1 RFG, with RVP/volatility reduced to Phase 2 level.
Sulfur content, wt %	1.36	1.36	1.36
Gravity, °API	32.3	32.3	32.3

Appendix A
Industry Comments and Response for Memo on
Impact of Phase 2 Gasoline Reformulation on the Cost of Using Ethanol in PADD II

Replies follow in bold italics for industry comments on the memo on "Impact of Phase 2 Gasoline Reformulation on the Cost of Using Ethanol in PADD II."

1. While the approach taken is reasonable, it resulted in VOC not being constraining in Case 3. This is unreasonable (but probably does not have a big cost impact) in a model which should be trying to compensate for ethanol's RVP kick. As pointed out in the text this is because sulfur reduction results in some small VOC reduction benefits. A more correct approach might have been to make Case 3 the same as Case 2 but with the RVP's from Case 1 and then look at the difference between Case 2 and 3. *The suggested approach would estimate the cost of RVP control, given Phase 2 pollutant emission specifications. Costs (actually savings for ethanol use) due to the change in Phases would not be accounted for. Compared to Phase 1, Phase 2 pollutant emissions specifications require reductions in properties such as sulfur content - and these reductions can reduce the (volatility control) costs that would otherwise be estimated by the suggested approach.*
2. While this study is interesting in examining the cost impacts of ethanol's RVP boost in Phase 2 RFG, the real alternative is to make Phase 2 RFG with MTBE. This is the hurdle that ethanol has to overcome. *The study is premised to estimate the cost impact of Phase 2 requirements on ethanol users, i.e., to estimate only the cost of continuing to use ethanol in Phase 2 RFG, given that ethanol has been used in Phase 1 RFG.*
3. All of API's and NPRA's previous concerns about the unconstrained model still remain. This is particularly true in this type of case where the model has many high RVP segregations and many low RVP ones. A real refinery doesn't have the capability to accomplish all of these segregations. To the model these segregations are free, while a real refinery will incur costs to build this segregation infrastructure. Midwest refineries, in particular, have not had to produce much low RVP gasoline and thus have not had to build the piping and tankage infrastructures to segregate low RVP blend components. *ORNL understands that unrealistic stream separations can occur in the model, and based on industry recommendations, a composited version of the model is being developed (scheduled for completion in late 1999). Compositing will eliminate many unrealistic stream separations, and ratio controls will be required for a much smaller, manageable number of streams.*
4. Pooling regular and premium grades, also allows the model to more easily meet the RVP reductions required. Premium blending generally uses the components which have low RVP's. Thus, reducing RVP in the regular pool is much more difficult than modeled in this study. The last increment of RVP reduction is much more expensive than previous increments, since C5's must be removed. This is a serious shortcoming.
In recent case studies of an ether ban, with ethanol used as the oxygenate for RFG, a pooling case was compared to a case with gasoline grades. The processing and capital costs for the latter case were 0.1 cent per gallon of RFG higher than in the pooling case. The ratio-free version of the model was used in these cases, and ORNL understands that unrealistic stream separations could have occurred.
5. Without C3, C4, and C5 balances, it is difficult to tell exactly how the model is reducing RVP. For example, Are C3's being backed out of the alkylation unit and being sold? The alkylation volume in Table

5 barely changes between Cases 1 and 3 but Tables 8&9 imply that investment costs have doubled. Where did this investment go? Butane isomerization is similarly confusing. *In a comparison of RFG blendstocks for Case 3 versus Case 1, Table 4 shows a substantial increase in reformate, due, in part, to its attractive RVP. For RFG, there are substantial decreases in higher-RVP butane, FCC naphthas, alkylate, polymer gasolines, and dimate.*

Alkylation plant expansion is only 2 percent in Case 3 compared to capacity in Case 1, and the expansion is consistent with alkylate volume increases (2 percent increase in alkylate) in conventional gasoline/ total gasoline blending. There is an increase in uptake of C3's in the alkylation unit. Isobutane feed to the alkylation unit increases by about 2 percent, most of which is provided by additional C4 isomerization capacity.

6. The butane remaining in the blending pool is another area where the model has had problems in the past. As mentioned above, since the Midwest has not had to make large amounts of low RVP gasoline, debutanizer cutting capability is poor and significant amounts of butane are left in the blending streams. Depentanizers are rare in the Midwest and will have to be built. The model does not seem to have a cost for these operations.

Clarification is needed for the comment on butane problems. If industry believes that the model uses incorrect RVP blending values, industry guidance on correct RVP blending values would be appreciated.

The model is favoring a modest conversion strategy (e.g., with different operating modes and/or utilization of process units) rather than debutanizing/depentanizing. For the pool as a whole, Table 5 suggests that RVP reduction is achieved by modest reduction in butane and straight run naphthas; with small increases in reformate, alkylate, and C5/C6 isomerate.

The ORNL estimate of the cost impact of Phase 2 requirements on ethanol users is 1 cent per gallon of ethanol, for a strategy which is not exclusively depentanization. For comparison, The Pace Consultants, Inc., reports an explicit depentanization case with a total cost increase between 1.3 and 1.4 cents per gallon of ethanol (Raj Gupta and Dan Foley. 1998. "Analysis and Refinery Implications of Ethanol-Based RFG Blends under the Complex Model Phase II." Prepared for Renewable Fuels Association. Houston, TX, November). The Pace payout period for investment is four years. If Pace investment premises were the same as in the ORNL analysis (15 year project life, 10 year tax life, 10 percent after-tax rate of return on investment), then its depentanization case cost increase would be the same as the ORNL analysis - 1 cent per gallon of ethanol.

7. Based on industry modeling and experience with blending 7.0 psi RVP gasoline for Georgia, the volumes of new alkylation and C%+ isomerization seem very low. *The ORNL analysis may not be comparable to the situation described. In the ORNL analysis, RFG is only 13 percent of the total gasoline pool, and the pool RVP falls less than 0.2 psi (between Case 3 and Case 1).*

8. This study seems to concentrate on RFG in the Chicago and Milwaukee areas, which use ethanol for virtually all RFG. However, Louisville and northern Kentucky use RFG with both ethanol and MTBE. Most of that MTBE is from captive refinery MTBE units, which will continue to be run unless MTBE is banned. I assume that the model is replacing all that MTBE in RFG with ethanol. *The study is premised to approximately represent PADD II refineries which are using only ethanol as the source of oxygen for RFG. However, internally produced MTBE is being blended to conventional gasoline in the study. While the oxygenate premise may overstate the cost of RFG, the study focuses on the cost of continuing to use ethanol in Phase 2 RFG, given that ethanol has been used in Phase I RFG.*

Mr. GREENWOOD. The Chair recognizes for 5 minutes of inquiry the gentleman from Texas, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. Milazzo, in your testimony you mention, and you boldface: "Given the questionable benefits to air quality of MTBE we believe in and have called for the ban on MTBE."

"Questionable benefits of air quality." Did you hear the last panel?

Mr. MILAZZO. Yes, I did.

Mr. GREEN. None of those, the EPA, Energy, none of them questioned—in fact, your testimony is the first on this panel that I have heard say that MTBE does not help our air quality.

Mr. MILAZZO. I think when you look at it on the whole basis of the air quality benefits versus the impacts of groundwater, that is what we are talking about.

Mr. GREEN. No, we are talking air quality, not groundwater. I will get to that on my next question.

Why is this statement in here? Like I say, I have not heard that; and we have had three hearings so far on this, that MTBE is not beneficial to air quality. In fact, we have heard it has done better than they even modeled it back in the late 1980's.

Mr. MILAZZO. Well, I have a November 20, 1998, Water Week Publication, which is something that is given out to water utilities and water companies, which says, "A study from the University of California at Davis concluded there is no significant additional air quality benefit through the use of oxygenates such as MTBE in a reformulated gasoline."

Now, that is a study from 1998.

Mr. GREEN. Well, obviously, it is from a water authority; and I would not quote them for air quality.

Mr. BILBRAY. If the gentleman would yield.

Mr. GREEN. I yield.

Mr. BILBRAY. I would like to reinforce the gentleman's point.

Mr. GREEN. Okay. It's just that I run out of time so quick.

Mr. BILBRAY. I just want to point out that was U.C. Davis talking about the reformulated fuel in comparison to California. I think it is unfair, because you are using a reference to a gasoline standard that is not used in the rest of the country.

So Mr. Green's point was MTBE as opposed to the other Federal formulas, not in comparison to the California formula.

Mr. GREEN. Let me follow up. What is the parts per billion of MTBE in the Suffolk County Water Authority?

Mr. MILAZZO. In the water?

Mr. GREEN. Yes.

Mr. MILAZZO. As I mentioned, we have some detections at .5 parts per billion to 10, with a couple of wells having consistent levels in the six to 10 range. There have been historically some sites that were higher.

Mr. GREEN. Higher than 20, for example?

Mr. MILAZZO. Yes, sir.

Mr. GREEN. In the testimony we heard from the last panel, the majority of the detections are below levels of public health concern, with approximately 1 percent rising to the levels of 20 parts per billion, with some rare instances above 100 parts per billion.

Let me for the record, Mr. Chairman, say that Mr. Franks from New Jersey gave me some MTBE that is 600 parts per billion. It does not identify where it is from, so I would hope that we would find out if there is some water authority in New Jersey that has water with 600 parts per billion. Because if only 1 percent is above 20 parts per billion, I would be concerned about 600 parts per billion.

But to continue the testimony from Mr. Greenbaum, the major source of groundwater contamination appears to be releases from underground storage tank systems. Have you found that to be correct?

Mr. MILAZZO. Well, again, it is never simple. What we find is that the higher level detections in that six to 10 range and higher levels are attributable to a source. There is a USGS study that I was just looking at, updated in 1998, which indicated the lower levels may be point or nonpoint sources, and small concentrations that are detected in groundwater, the source contamination may be a point source but more likely is nonpoint source, such as atmospheric wash-off.

Mr. GREEN. You said atmospheric. Again, Mr. Chairman, I have sat through these and read as much as I could. Is it your belief that by the cars burning MTBE, that that then gets into the groundwater?

Mr. Grumet, can you?

Mr. GRUMET. If I might, yes, it is.

Mr. GREEN. Can you quote any studies showing that?

Mr. GRUMET. I can quote my own.

Mr. GREEN. Well, I have not seen your own studies, so I am not prepared to ask questions on it. But I would like to see it, and we will submit questions on it.

Mr. GRUMET. Very quick, though, and you are making this point, the vast majority of detections are at very low levels. We believe the dominant mechanism leading to the vast majority of those detections is atmospheric deposition. The good news is it cannot get much worse than it already is.

Mr. GREEN. Okay, I will send some questions to follow up, if you could submit that. And, Mr. Chairman, if we have that study, I would like to look at it.

Is New Jersey part of the group you represent?

Mr. GRUMET. Proudly, they are.

Mr. GREENWOOD. Let me quote Robert Shinn, who is Commissioner of the Department of Environmental Quality, that was published in the letter to the press of Atlantic City on February 24 of this year.

After reading an article on gas additives, I wanted to give some facts, and this is quoting Mr. Shinn, "A 1997 survey conducted by the New Jersey Department of Environmental Quality found traces of MTBE contamination in untreated water at 46 noncommunity water systems and 29, only one noncommunity water system and one community water system in Fair Lawn exceeding New Jersey's 70 parts per billion."

So, again, to follow up, I don't know where 600 parts per billion came from.

But to continue to quote him. "the '60 Minutes' show left the erroneous impression that MTBE cannot be removed from water. In the example of the Fair Lawn Water Department, untreated water sampled 37 to 73 parts per billion, but treated water was only one part per billion. MTBE is just one facet of the historic problem of leaking underground storage tanks. That problem is being solved."

Again, I would look forward to any information, scientific, that by me burning MTBE in my truck it will get into the groundwater, because that has not been the testimony that I have heard, up until your testimony.

Mr. Chairman, I have some other questions.

Mr. GREENWOOD. The gentleman from Texas needs to know that we could not get the timer started, so you got an extra minute already.

Mr. GREEN. Okay. Well, let me just say that I was intrigued by the different standards for different parts of the country. Are you suggesting we have a different standard for the East Coast, the Midwest, the West Coast, or the Gulf Coast?

Mr. GRUMET. I am suggesting that the status quo of the performance of the RFG program is that the air toxics benefits in the Northeast and the Gulf Coast have been greater than in the Midwest. Our commitment is to make sure that there is no deterioration of benefits as we change this program.

Mr. GREEN. We agree.

Mr. GRUMET. So if you want to try to maintain the status quo, we need to decide whether to do it uniformly or whether to come up with some regional scheme.

Mr. GREEN. Again, I have some concern about regional issues, because I would not want one city to have to comply with different standards that another city may not have to.

Mr. GREENWOOD. Mr. Ganske for 5 minutes of inquiry.

Mr. GANSKE. Thank you, Mr. Chairman. When I was talking earlier in the day about MTBE showing up in Iowa's water, I said I thought some of it could come from emissions from cars. But I think also, because in the past MTBE, as used in Iowa, we also, I am sure, have an underground water storage problem too. So that is probably part of it.

I got the sense from all three panelists that you are concerned about increased aromatic and olefin content in gasoline. So I just have one question, Mr. Chairman, in the interest of moving on; and I would like all three members to just address this question: Would you support a cap on aromatic content as a part of an anti-backsliding provision if we do some legislation in this area? Mr. Skinner.

Mr. SKINNER. I think that would have to be an important component. There is no question. I do not know how else you get around the backsliding issue.

Mr. GANSKE. Mr. Grumet.

Mr. GRUMET. I think there are multiple ways to address the backsliding issue. I think that is one viable option.

Mr. GANSKE. Mr. Milazzo.

Mr. MILAZZO. I think the water authority will not take a progression on that. We are a water purveyor, and we just want to make

sure the water we serve is safe and meets our customers' requirements.

Mr. GANSKE. I appreciate that. Thank you, Mr. Chairman.

The GREENWOOD. The gentleman from Iowa yields the balance of his time. The gentleman from California is recognized for 5 minutes.

Mr. BILBRAY. I am sorry that the gentleman from Texas left because he was saying he did not want one city to have one standard and another city to have a different one. The fact is right now the Clean Air Act specifically discriminates one city against another with this mandate. Not all cities have this. And, in fact, you can have cities a few miles away from each other that will have a totally different fuel mixture because of the way the act is applied.

Maybe we ought to talk about a national standard. Maybe we ought to talk about that, if this is for fuel independence, that we need to have a national standard. But that is not what we thought in the past.

Mr. Skinner, in your testimony you state that Illinois, at least three separate communities, have discontinued the use of drinking water due to MTBE contamination. Your neighborhoods and also your neighboring State of Wisconsin have addressed this. My question is, with all the considerable public outcry and complaints about headaches, dizziness, nausea and everything else, was that due to the presence of MTBE in the reformulated gasoline?

Mr. SKINNER. Well, there are two separate situations. The one you are referring to, and the one Mr. Barrett referred to, was the Milwaukee implementation of RFG probably 5 years ago now. I not only had a professional interest in that, but my sister strayed to the dark side, and she is a TV reporter, or was a TV reporter in Milwaukee and happened to be doing this story at that time, so we actually talked about it at that point.

USEPA will tell you it was not conclusive. The result was not conclusive. They claimed it was not the MTBE. At one point I think they probably thought it was a figment of Milwaukee's imagination. The fact of the matter is when the fuel was switched from MTBE to ethanol, the complaints ceased. They disappeared. So I think you could probably extrapolate a cause and effect there.

Mr. BILBRAY. Didn't have anything to do with their beer?

Mr. SKINNER. I still drink Milwaukee beer, so I do not think it did.

Mr. BILBRAY. So now is ethanol the oxygen of choice for this region?

Mr. SKINNER. Yes.

Mr. BILBRAY. Is it reasonable then for the subcommittee to assume that the people in those areas would not welcome MTBE back into the gasoline?

Mr. SKINNER. I think that is our belief, yes. I think there would be an outcry if we, and I use "we" loosely, tried to substitute MTBE for ethanol.

Mr. BILBRAY. One other question that was brought up was specifically about the division between and the implementation of the mandate. It was a reference to the Davis study. I wanted to clarify that. That study was not comparing the use of MTBE or ethanol

and an unoxygenated Federal fuel. It was comparing it to a California reformulated standard.

Now, there was a comment by the gentleman about content regulations, and I just asked our witness from the air districts about this. Isn't one of the biggest problems we have run into with the oxygenated mandate that it is one of the few times in the Clean Air Act where process takes precedence over outcome; that when we talk about content, about what goes in and not necessarily what comes out, it eliminates the flexibility?

My background working on the air issue is—isn't this true—that one of the great successes we have had is with the Clean Air Act, which is probably one of the most outcome-based environmental strategies that we have ever implemented; as opposed to the Clean Water Act, which is obsessed with process? You want to articulate the flexibility of setting standards and allowing the local people to fulfill those standards?

Mr. GRUMET. I think the basic wisdom of the Clean Air Act is that it sets national requirements and, to the greatest extent possible, empowers local officials to design plans to meet those requirements. And when local officials are so empowered, we tend, to the greatest extent possible, to defer the actual specifications of things like the way a car is built or the way a gasoline is refined to the experts who actually undertake those processes.

So I think that general notion of deference to those who have expertise is one that we would like to try to maintain in our approach to this problem.

Mr. BILBRAY. That is the frustration, is trying to mandate it out of here in Washington. By the time we make a law, the concept is 5 years old. And you can imagine what would happen in the private sector if they tried to compete in the open market with that attitude, and I think the environment has reflected that.

The question really comes down to this issue of, when you have an outcry about a product like MTBE, and people, your constituents, are asking you why aren't you doing something about that, you have a mandate that says you have to have 2 percent no matter what. Can you explain to me the frustration you have run into in trying to address the water quality issues at the same time you have the Federal Government placing this mandate on your back?

Mr. GRUMET. I can tell you that there is no experience we have had of late more frustrating than trying to deal with the public outcry over this. I would add that I think the outcry and, to some extent hysteria, is amplified by our impotence to respond. Because we are incapable of pursuing the kind of prudent principles that we have set before you today, that leads people to think government doesn't care, that government is callous, there are all kinds of conspiracy theories.

So I would suggest we can both not only solve the problem but increase public confidence in government if we move away from mandates, if we do not fall into the simple trap of bans and we give environmental regulators the authority we need to manage risk.

Mr. BILBRAY. I appreciate that. A ban is easy to talk about; it looks good in a sound bite, but it does not get it done.

Mr. GANSKE. [presiding] The gentleman's time has expired.

Mr. BILBRAY. I would ask for unanimous consent on one last question, Mr. Chairman.

Mr. GANSKE. One additional minute.

Mr. BILBRAY. Thank you. This issue of flexibility. You talked about the different impacts it would have on different regions based on toxic emissions. One of the frustrations I have had sitting at this panel, after sitting where you have, is the lack of understanding of the unique challenges not only geographically but also based on seasons. A clean fuel that is great in the summer may not be great in the winter. Standards that really work in the winter may be disastrous in the summer. Standards that are great at sea level may be disastrous at places at high altitudes.

Can you articulate about that, trying to develop those outcome-based strategies in implementation?

Mr. GRUMET. Sir, you are absolutely right. The natural state of nature is chaos. So coming up with a one-size-fits-all approach to that has proven different. On this particular issue, I think it is possible to balance the needs for that autonomy at the State level and the need for having consistent specifications at the refinery level with some basic approaches that bound and measure State authority to act in our own interests. And I would suggest to you the principles we have put together with environmental organizations and the oil companies does just that.

Mr. BILBRAY. Thank you, Mr. Chairman.

Mr. GANSKE. The gentleman from New York, Mr. Lazio, is recognized for 5 minutes.

Mr. LAZIO. Thank you very much, Mr. Chairman. Let me thank all the witnesses. I have a couple of questions for Mr. Milazzo, and I would like to sort of follow up on my previous line of questions with the previous panel.

Having to do with trying to achieve a reasonable balance between air quality and water quality—and this may take some time—give me a sense based on the testing that has been done by the Water Authority—and I am happy to hear from the other panelists, as well—what is your assessment of whether or not we would have the time to develop an alternative? And I know it is a difficult question because how much time is that, but does this look like it is an immediate health issue, or is it something that is likely to evolve into a more serious health issue?

Mr. MILAZZO. I would submit it is the latter.

What we are finding is we have detects—and I talked about those—and we have a few significant detects where 10 parts per billion, but we are treating that water with filtration systems.

But we talked to our lab director yesterday, and we are finding that the detections are increasing and that low-level detects, those less than 2.5 parts per billion, are becoming widespread. We can address those. We can handle that. And we can make sure that the water we are providing is safe. But if those levels start to increase up and if the State reduces its limit to 10 parts per billion, that will be a problem for us.

So, as the condition exists today, we can handle it; and the water we provide is safe. If the detections become more pervasive and the concentrations are higher, it will be a problem, and it will be some-

thing that we will address and make sure the water is safe, but it will be something that will add additional costs and expense.

Mr. LAZIO. Is there a trajectory that you can identify from the earliest testings that you have been testing for 10 years based on the earliest testings to where we are right now?

Mr. MILAZZO. I would submit that what we are seeing is just a general trend up in the number of detections. Lower-level detections are becoming more widespread, and occasionally we will get that one significant detection, but again that is attributable usually to a source.

Mr. LAZIO. Has there been any change in the detection methodology that would explain part of the increase in detection?

Mr. MILAZZO. Not that I am aware of. I think we are using the same methods.

Mr. LAZIO. How about the depth of the wells that are being tested here? Is there evidence that it actually is in the aquifer, or is it somewhere else in the well system do you think is the primary contamination?

Mr. MILAZZO. That is a good question, and it allows me to illustrate one thing. In my testimony, I talked about 480-odd wells. We have more wells than we use right now. We have 425 operational wells for 1999. Those are wells that were in service and providing water to our customers. They draw from three aquifers.

The first is the Upper Glacial, which is, and I am not a hydrogeologist, I will say on the order of hundreds of feet below. And then we have the Magothy, which is much deeper. And then underneath that is the Lloyd. That is the deepest of our aquifers.

We draw most of our water from the two upper aquifers, the Magothy and the Upper Glacial. The well depths range from 30 feet to, I would guess, on the order of 500 or 350 feet or somewhere in there. I can get you the exact figures.

One of the characteristics or features of the MTBE is that it moves awfully quick through our sands and awfully fast once it gets into the aquifer. The USGS study indicated it moves almost as fast as water in the aquifer. It spreads along the top of the water, so if we have a well and it gets in contact with our well screen, we are going to pull it up.

Mr. LAZIO. I want to ask you this question, because the Department of Health was in the other day in my office, and they were talking about the fact that they thought that tank leakage could not account for all the MTBE that they felt was turning up.

Do you have an opinion about that?

Mr. MILAZZO. I would tend to agree.

Again, when you have a tank, you would find the higher levels of the detection; and what we are finding is that .5 to 2.5 levels, again, the USGS is indicating that may be a nonpoint source.

Tanks can usually point to it. You can say, look at the levels, it is increasing, it is high.

Mr. LAZIO. Mr. Chairman, I would make a unanimous consent request to put in my opening statement because I was late getting in here.

The identification of the source of MTBE contamination is an important issue for a study, and I think the good partnership approach would be for us to think through how we can help facilitate

that, especially with some of the localities that are on the cutting edge of testing.

With that, I yield back. I want to thank again the panel.

[The prepared statement of Hon. Rick Lazio follows:]

PREPARED STATEMENT OF HON. RICK LAZIO, A REPRESENTATIVE IN CONGRESS FROM
THE STATE OF NEW YORK

Mr. Chairman, I thank you for holding this hearing on the reformulated gasoline requirement of the Clean Air Act. As you are aware, this is a critically important issue in my home state of New York and in particular, in my own Suffolk County, Long Island district. I thank you for allowing us to explore the complexities of this issue for the nation as a whole.

Many around the country are looking to this body to resolve this complex issue, which pits one environmental program over another. Many members see an outright ban on MTBE as the only needed action. Others would have us do nothing. Unfortunately, for the State and local officials who have the awesome responsibility of managing our health-related environmental programs, for ensuring that our citizens have both healthy air to breathe and water to drink, the best solution may be more complex. We, in this subcommittee, have the unenviable task of untangling the web of requirements in a manner that reaps positive environmental benefits for both our air and water resources. I appreciate your foresight in holding this hearing and for inviting these distinguished panels of experts to help us before we start solving this difficult problem.

We, in Long Island, have seen the complexities of the reformulated gas issue from both the air quality and water quality perspective. As you are aware, my New York district is one of the non-attainment areas that relies upon the reformulated gasoline requirement to meet our air quality standards. New York State officials believe that we must make full use of all available tools if we are to make our air healthy for our people. They feel strongly that the reformulated gasoline requirement has played a significant role in those plans and has helped us with our air quality successes that we have achieved thus far.

Long Island, however, also has seen the adverse impacts of this requirement. Long Island relies heavily on groundwater for its drinking water. Unfortunately, with its sandy soils, the island's groundwater is very vulnerable to contamination from spills. In a heavily suburbanized district as mine, tank leaks and spills associated with everyday life are only too common. The Suffolk County Department of Health Services has been analyzing for MTBE in their samples since they first detected it in 1991. With over 49,000 samples since then, they have built up a sizable database on MTBE. It has been detected in about 13% of the community water supply wells, generally at very low levels. It has also been detected in a higher percentage of private wells in the major towns of my district.

Today, we will be fortunate to be hearing from individuals representing both the air and water management perspectives of my Long Island, New York constituents. New York is one of eight states participating in the Northeast States for Coordinated Air Use Management, NESCAUM. That organization has been studying the reformulated gas issue and has developed a set of principles that my state supports. I am pleased that this committee has invited the Executive Director of that organization to testify today.

In that same panel, we will be hearing from a representative the local water authority in my district. The Suffolk County Water Authority is the nation's largest supplier of drinking water from groundwater. This group has been collecting data on MTBE in the ground water since the requirement first came on the books. They have been looking closely at the cost of removing the MTBE from the water they supply to my constituents. Since these costs are passed along to my constituents, their observations should prove useful to understanding the urgency I attach to this issue.

I would also like to submit for the record, written testimony from the Suffolk County Department of Health Services. They have an extensive database on this contaminant. It would be useful if we could arrange for localities like this to be able to communicate with each other about their experiences and findings. This interchange of ideas and information would be very useful to our local officials who have to manage this very difficult issue.

Finally, I hope to learn today from our panels that our experts in EPA and elsewhere are looking at the multimedia implications of future environmental solutions so that we do not find ourselves in a similar situation again. We should have foreseen the impacts on our groundwater of this Clean Air requirement.

PREPARED STATEMENT OF CLARE B. BRADLEY, M.D., M.P.H., COMMISSIONER,
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES

Background

As Commissioner of the Suffolk County, New York, Department of Health Services (SDHS), I am pleased to have the opportunity to outline our experiences and concerns with MTBE as a groundwater contaminant.

The department is responsible for ensuring that the drinking water supplies of Suffolk County, which comprises the eastern two-thirds of Long Island, New York, are safe now and for future generations.

For a county-level water supply enforcement agency, my department expends extensive resources in its commitment to water supply and groundwater resource monitoring. However, the importance of our resource deserve nothing less. The Long Island groundwater aquifer system is one of the most closely monitored and painstakingly researched in the United States. In 1978 it became one of the first Sole Source Aquifer Systems established pursuant to Section 1424(e) of the Federal Safe Drinking Water Act (SDWA). The significance of this designation was an assurance that federal funds could not be committed to any project that may contaminate the aquifer through a recharge zone so as to create a significant hazard to public health.

With our guidance and technical support, municipalities on Long Island have joined together to create a comprehensive planning structure to ensure the safety of our water resources for all time. I am proud of our department's role in furthering this effort.

SDHS—Environmental Division

Our Division of Environmental Quality has water supply and water resource protection as a major area of focus. Its Office of Water Resources is charged with data-gathering responsibilities and acts as the designated enforcement arm of the State Department of Health, which was granted Primacy under the SDWA.

Another unit of the Environmental Division, the Office of Pollution Control acts to enforce a comprehensive battery of county sanitary code requirements that limit and control the storage of toxic and hazardous materials, some of which are still quite unique. The office has been charged with the enforcement of Article 12 of the Suffolk County Sanitary Code, which has succeeded in the removal of old gasoline tanks, and which began an aggressive program of tank testing and replacement in 1980. Under this Article 6,724 gasoline tanks have been removed and 2,133 tanks installed in conformance with these regulations. This regulation, which I believe was the first of its kind in the nation, requires the replacement of steel tanks with double-wall fiberglass tanks. Article 12 anticipated the federal EPA underground storage tank requirements that became effective at the end of last year.

The Office of Wastewater Management is responsible for the enforcement of regulations which control sanitary sewage disposal practices, limiting density or requiring sewers in deep recharge areas of the county, in conformance with the recommendations of the 1978 Long Island Wastewater Management Plan, prepared under the auspices of Section 208 of the Federal Water Pollution Control Act of 1972.

Our Environmental Division has also acted as project managers for a series of groundwater planning activities, including the aforementioned 208 Study and the Suffolk County Comprehensive Groundwater Resources Management Plan in 1987. Very shortly we expect to begin the Long Island component of the New York State Source Water Assessment Program (SWAP), mandated by congress under the 1998 SDWA amendments. The Long Island SWAP, one of the most ambitious in the country, will examine the areas contributing to the sources of public drinking water and assess the potential for drinking water supply contamination. The Division also has an important role in coordination of efforts of the County Pine Barrens Commission to preserve critical portions of the county deep recharge areas by acquisition and innovative development rights transfers, as well as providing technical assistance in other watershed management and acquisition activities.

Finally, the Division's water resource protection structure is supported by our Public and Environmental Health Laboratory (PEHL), which provides the Division with analytical services. The PEHL has allowed my department to investigate and uncover many water supply contamination problems years before they were recognized to be nationally significant issues. Our MTBE findings are one such example.

MTBE

In Suffolk County, MTBE is a groundwater contaminant of significant concern at this point, primarily due to the frequency of its detection in public water supply well sources and groundwater test wells. The ability of MTBE to contaminate water sup-

plies was evident since its detection in 1991, when our laboratory extended its analytical capabilities to include it in our volatile organic chemical analyses. Since that time over 49,000 samples have been analyzed by our PEHL. Using our authority under the County Sanitary Code in 1994, we required that large community water suppliers (CWS) incorporate MTBE into their self-monitoring of wells. Nationally, monitoring under the Unregulated Contaminant Monitoring Rule update will not be required by EPA until the 2001-2003 monitoring cycle.

I wish to also point out that our larger suppliers often voluntarily go well beyond our minimum monitoring frequency requirements, and the evaluation of MTBE occurrence is no exception. Most notably the Suffolk County Water Authority (SCWA), the largest supplier in the county and the largest (by population) groundwater source—CWS in the United States, voluntarily samples some of their wells as often as weekly during their operation. This not only illustrates the depth of the commitment of our water suppliers to the safety of the product they provide, but underscores the point that routine comprehensive monitoring of Suffolk's over 530 community wells costs several million dollars each year. Each new contaminant incrementally increases this cost, which ultimately is borne by the water supply customer.

I can say with some confidence that our total base of data on MTBE is extensive. However, our findings are not unique. MTBE detections were reported elsewhere, predating Federal EPA policy decisions that led to its use in Reformulated Gasoline. For example, the USGS National Water Quality Assessment Program reported detectable MTBE in 27% of shallow urban wells in 1993-1994 sampling.

As you probably have heard from other participants in these proceedings, MTBE chemistry makes it a significant groundwater contaminant. The high vapor pressure of MTBE allows it to volatilize rapidly from liquid gasoline into the air; its high solubility allows the vapor to be removed from an equilibrium condition by dissolving into rainwater, moving it into the water cycle. In groundwater it is a very mobile contaminant, approaching conservative groundwater tracers in mobility and non-biodegradability.

Our experience in the early 1990's was that MTBE was encountered at a relatively lower frequency and usually in conjunction with other gasoline fractions—benzene, xylend, toluene, and ethybenzene. Beginning in 1979 its use as an octane enhancer replacing lead meant initially that it was present in gasoline in relatively lower concentrations (2-7%). Those rare occurrences in which MTBE was found, without the presence of BTEX compounds, were thought to reflect the inefficient removal of MTBE in some earlier gasoline spill site cleanups.

By 1992 MTBE emerged as the clear choice as an oxygenate in many parts of the country. In more recent years, detection patterns have changed significantly, almost certainly due to MTBE's usage in much higher percentages in RFG (typically 11-15%). Frequency of detection in both private and public wells subsequently increased, but rarely in co-occurrence with BTEX. The frequency of MTBE detection in Suffolk's community wells has held at the 10 to 13%. On the order of 80% of these detections are in the .5-2.0 ppb range. A review of SCWA data generated last year indicated only 4 CWS wells had levels between 5 and 10 ppb. Even so, frequency of *detection* should be recognized as being different from frequency of *exposure*. That is primarily because a fair percentage of these wells (on the order of 40% of the SCWA wells with MTBE) already provide granular activated carbon treatment for other volatile organic chemical contaminants. This observation is something that will bear further consideration during the previously mentioned comprehensive investigation of the SWAP.

MTBE is now almost always the basis for any nominations that we make to the NYSDEC Spill Program and MTBE detection is the most common non-pesticide contaminant driving our private well surveys.

I enclose with a copy of my testimony a table indicating MTBE detection in private wells in Suffolk. Although about 90% of Suffolk's population (approximately 1.3 million people) are served by one of 43 community water systems, the balance of our residents (approximately 200,000 people) are served by one-site relatively shallow private wells. We estimate on the basis of the 1990 census that there are approximately 60,000 private wells serving year round and seasonal homes. Although concentrated primarily in eastern Suffolk, there are private wells in each of the ten towns in Suffolk. In a review of 1997-1999 data, MTBE detection in tested private wells ranged from 0.5- to approximately 1300 ppb. Frequency of MTBE detection in private wells for the period was 7.5% (325 of 4,312 records).

Because of the presence of a "generic" MCL for individual Unspecified Organics in the New York State Sanitary Code since 1989, we have from the time of the first MTBE detection enforced a 5-ppb standard. New York is developing a new regulation in no small part in response to the frequency of MTBE detection, public con-

cerns, and some health effects studies nearing completion. Based on the recent State Department of Health request for information for a Regulatory Impact Statement currently under development, we believe that the likely new state MCL will be 10 ppb. This would be in line with MTBE standards in some other states.

The short-term impact of a lower state standard to currently operating community wells (based largely on review of recent data) is low. However, the short-term impact to non-community public supplies and private well is expected to be more significant.

In the absence of an MTBE ban, we assume the frequency of low level detection in all groundwater sources will increase, and that the economic burden of treating water supplies or seeking alternative sources will continue to increase over time.

While the state and federal review process will concentrate on health effects, MTBE's ability to degrade the aesthetic character of water should be given serious consideration. MTBE is often described as having a turpentine-like taste and smell, even at very low concentrations. Some reports indicate that consumers can detect it in drinking water at concentrations as low as 2.5 parts per billion (ppb). With such a low taste and odor threshold, it is possible that consumers would notice MTBE contamination at much lower levels than are likely to cause health effects. Accordingly, the California Department of Health Services has finalized a secondary standard at 5 ppb, based on taste and odor, and a primary drinking water standard of 13 ppb was under reviews at last report. This concern of public water suppliers is completely legitimate in my view. Aesthetic characteristics have historically been criteria for rejection of water sources in the water supply industry. From the perspective of the water supplies, they have not brought on this problem and should not be left to deal with it alone.

Environmental health professionals are awaiting the evaluation of health effect studies regarding MTBE. There is relatively little further information that my office can bring to you on this issue. However, from the standpoint of exposure to MTBE, the most significant contact with MTBE for the average resident of Suffolk is not drinking water, but breathing air. This exposure should be better documented in the light of overall health concerns. I have concluded that the anticipated increase frequency of MTBE detections warrant action to remove it from gasoline formulations.

However, my department must continue to determine the extent of problems that have already occurred, understand the mechanisms under which contamination can occur, and pursue remediation of the problems that exist. Other MTBE contamination mechanisms besides direct fuel storage leaks should be reviewed: gas transfer operations, volatilization from storage or incompletely combusted gasoline exhaust return in precipitation and recharged, and homeowner misuse. I am hopeful that the national importance of these steps will be recognized and that federal assistance in this effort would be extended to us.

Finally, I wish to continue to offer whatever technical assistance our department can provide to you as this national dialogue continues.

MTBE Private Well Detections

Suffolk County—1997-99

Town	Samples	Detects	% detect	Lowest	Highest
Babylon	21	8	38	0.5	34
Brookhaven	907	65	7	0.5	140
East Hampton	544	24	4	0.5	790
Huntington	71	3	4	1	360
Islip	24	7	29	0.6	3
Riverhead	289	13	4	0.5	9
Shelter Island	47	3	6	0.5	2
Smithtown	516	31	6	0.5	1300
Southampton	676	56	8	0.5	430
Southold	1217	115	9	0.5	750
County	4312	325	7.50	ppb	ppb

Source: SCDHS Bureau of Drinking Water.

Mr. BILIRAKIS. [presiding] Without objection, the opening statement of the gentleman from New York will be entered into the record. And without objection, if the gentleman, Mr. Milazzo, would supply the staff with a copy of his report, we would like to have

that entered into the record, as well. If the staff would pick that up from Mr. Milazzo, that would be useful.

[The information referred to follows:]



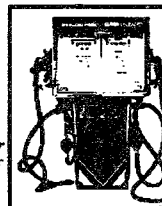
Environmental Behavior and Fate of Methyl *tert*-Butyl Ether (MTBE)

By Paul J. Squillace, James F. Pankow, Nic E. Korte, and John S. Zogorski

U.S. Department of the Interior - U.S. Geological Survey
National Water Quality Assessment Program (NAWQA)
Fact Sheet FS-283-96 (Revised 2/98)

Abstract

*When gasoline that has been oxygenated with methyl *tert*-butyl ether (MTBE) comes in contact with water, large amounts of MTBE can dissolve; at 25 degrees Celsius the water solubility of MTBE is about 5,000 milligrams per liter for a gasoline that is 10 percent MTBE by weight. In contrast, for a nonoxygenated gasoline, the total hydrocarbon solubility in water is typically about 120 milligrams per liter. MTBE sorbs only weakly to soil and aquifer materials; therefore, sorption will not significantly retard MTBE's transport by ground water. In addition, MTBE generally resists degradation in ground water. The half-life of MTBE in the atmosphere can be as short as 3 days in a regional airshed. MTBE in the air tends to partition into atmospheric water, including precipitation. However, washout of gas-phase MTBE by precipitation would not, by itself, greatly alter the gas-phase concentration of the compound in the air. The partitioning of MTBE to precipitation is nevertheless strong enough to allow for up to 3 micrograms per liter or more inputs of MTBE to surface and ground water.*



Introduction

Fuel oxygenates are voluntarily added to gasoline to enhance the octane of gasoline in many areas of the United States, and fuel oxygenates have been used since 1988 to improve air quality (Begley and Rotman, 1993) in some metropolitan areas. However, since November 1, 1992, the 1990 Clean Air Act Amendments require areas that exceed the national ambient air-quality standard for carbon monoxide (carbon monoxide nonattainment areas) to use oxygenated gasoline during the winter when the concentrations of carbon monoxide are highest. Furthermore, since January 1995, the 1990 Clean Air Act Amendments also require nine metropolitan areas that have the most severe ozone pollution to use, year-round, reformulated gasoline that contains fuel oxygenates. Numerous additional metropolitan areas have chosen to participate in the oxygenated fuels and reformulated gasoline programs.

Currently, oxygenates are added to more than 30 percent of the gasoline used in the United States (U.S. Environmental Protection Agency, 1994) and the percentage may increase in the future. Indeed, it has

been projected that by the year 2000 fuel oxygenates will be added to 70 percent of the gasoline used in the United States (Shelly and Fouhy, 1994). Because of its low cost, ease of production, and favorable transfer and blending characteristics, methyl *tert*-butyl ether (MTBE) is the most commonly used fuel oxygenate (Ainsworth, 1992; Shelly and Fouhy, 1994). It can be produced at the refinery, it blends easily without separating from gasoline, and the MTBE gasoline blend can be transferred through existing pipelines. In the United States, almost all MTBE is used in gasoline. The second most-used fuel oxygenate is ethanol. Other oxygenates in limited commercial use include methanol, ethyl *tert*-butyl ether, *tert*-amyl methyl ether, and diisopropyl ether (Zogorski and others, 1997).

The U.S. Environmental Protection Agency has tentatively classified MTBE as a possible human carcinogen, but no drinking-water regulation has been established for MTBE (U.S. Environmental Protection Agency, 1997). The U.S. Environmental Protection Agency, however, has issued a drinking water advisory of 20 to 40 µg/L (micrograms per liter); this advisory is based upon taste and odor thresholds. However, this advisory concentration provides a large margin of safety for non-cancer effects, and is in the range of margins typically provided for potential carcinogenic effects.

MTBE has been detected in ground water (Squillace and others, 1996) and stormwater (Delzer and others, 1996). Of the 60 volatile organic compounds (VOCs) analyzed in samples of shallow ambient ground water that were collected from eight urban areas during 1993-94 as part of the U.S. Geological Survey's National Water-Quality Assessment program, MTBE was the second most frequently detected compound (after trichloromethane, which is also named chloroform) (Squillace and others, 1996). The ground-water samples were collected from 5 drinking-water wells, 12 springs and 193 monitoring wells. At a reporting level of 0.2 µg/L, MTBE was detected in water from 27 percent of the 210 wells and springs sampled, but no MTBE was detected in water from the drinking-water wells. Measurable concentrations of MTBE were also found in some of 592 stormwater samples collected by the U.S. Geological Survey in 16 cities and metropolitan areas required to obtain National Pollutant Discharge Elimination System permits (Delzer and others, 1996). MTBE was the seventh most frequently detected VOC, occurring in 6.9 percent of the stormwater samples. MTBE had a higher reporting level of 1.0 µg/L for most of the stormwater samples, and it is likely that this resulted in fewer detections when compared to some of the other VOCs that had a reporting level of 0.2 µg/L for all of the samples. Where MTBE was detected, concentrations ranged from 0.2 to 8.7 µg/L. Eighty-three percent of all stormwater samples that had detectable concentrations of MTBE were collected between October 1 and March 31. This period of time is approximately when oxygenated gasoline is used in carbon monoxide nonattainment areas.

The purpose of this document is to answer commonly asked questions relating to the environmental behavior and fate of MTBE. Where appropriate, this report contrasts the properties of MTBE with those of benzene, methylbenzene (also named toluene), ethylbenzene, and xylenes (BTEX compounds). BTEX compounds are present in all gasoline and are the most soluble and toxic compounds associated with nonoxygenated gasoline.

How, and to what extent, does MTBE partition to air, water, and subsurface solids?

Volatilization and condensation are the complementary processes that allow the exchange of MTBE across an air-water interface. In this context, volatilization refers to the movement of MTBE from water into the atmosphere, whereas condensation refers to the movement of MTBE from the atmosphere into water. Both processes are driven by concentration gradients between the air and water phases.

When compared to benzene, MTBE tends to partition strongly from the gas phase into the water phase if contaminated air is brought into contact with uncontaminated water. Given sufficient time, equilibrium can be established between concentrations of MTBE in air and water as described by Henry's Law constant, which is temperature dependent. If the same units are selected for the air and water concentrations, then Henry's Law constant is dimensionless. The value of the dimensionless Henry's law constant for MTBE is 0.022 at 25 degrees Celsius (°C) (Robbing and others, 1993); a compound with a value of 0.05 or larger would be very volatile from water. Consequently, MTBE tends to stay in the water phase, which explains why MTBE is somewhat difficult to remove from water by aeration. In contrast, the dimensionless Henry's Law constant for benzene is 0.22 at 25°C (Howard and others, 1990), which indicates that it volatilizes from water and can be removed by aeration. However, the Henry's Law

constant alone cannot be used to predict the volatility of MTBE from natural water because volatilization also depends on environmental variables such as surface-water turbulence, and to some extent wind velocity.

Water solubility is probably the most important chemical property affecting the partitioning of organic compounds between water and subsurface solids. Many organic compounds exhibit water solubilities in the low milligrams-per-liter to micrograms-per-liter range. In general, these low solubilities indicate a strong partitioning to the organic carbon associated with the subsurface solids. However, MTBE is very water soluble compared to the BTEX compounds and other components in gasoline; the solubility of pure liquid MTBE in water is about 50,000 mg/L (milligrams per liter) whereas the next most-soluble component of gasoline is benzene, which has a solubility of 1,780 mg/L (Mackay and others, 1992, 1993).

What are the potential sources of MTBE and their effect on surface water and ground water?

There are point and nonpoint sources of MTBE affecting surface- and ground-water quality. The concentrations of MTBE in water associated with point-source spills can be very large. Gasoline spills to the land surface and releases from above-ground and underground storage tanks are examples of point sources of contamination. As indicated previously, at ambient temperatures the solubility of pure MTBE in water is about 50,000 mg/L (Mackay, and others, 1993). However, the solubility of MTBE in water is reduced when other organic compounds are present because MTBE partitions between the organic mixture and water; a gasoline that is 10 percent by weight MTBE, reduces the solubility of MTBE in water to about 5,000 mg/L at room temperature (25°C) (Barker and others, 1991; Zogorski and others, 1997; Squillace and others, 1997).



Excavated storage tank showing severe corrosion.

In contrast, for a nonoxygenated gasoline, the total hydrocarbon solubility in water is typically about 120 mg/L (Poulsen and others, 1992). The high solubility of MTBE in water combined with its high concentrations in an oxygenated gasoline can result in high concentrations of MTBE in surface water and ground water contaminated by point sources of oxygenated gasoline. Gasoline with MTBE can also contaminate large amounts of water; 1 gallon of reformulated gasoline mixed with 4 million gallons of water will yield 20 µg/L MTBE in the water (Squillace and others, 1997.)

Potential nonpoint sources of MTBE include precipitation, urban runoff, and motor water craft. Once MTBE is in water it is expected to move between surface and ground water with the natural movement of water. Local gas-phase concentrations of MTBE can be used to predict the concentrations of MTBE in the local precipitation. The amount of MTBE removed from the air by precipitation will not significantly reduce the gas-phase concentration of MTBE in the air; 2.5 cm of precipitation will remove less than 0.5 percent of the MTBE in the air at a temperature of 20°C (Zogorski and others, 1997). Even though little net loss occurs from atmospheric washout, the loss may nevertheless be important as a nonpoint source of MTBE to water. Although concentrations of MTBE in the air are not frequently measured, concentrations in urban air appear to be on the order of 1 part per billion by volume (ppb-v), or less (Zogorski and others, 1997). The corresponding equilibrium concentration in precipitation at a winter temperature of 5°C would be 1 µg/L or less. Given higher concentrations such as 3 ppb-v, the equilibrium concentrations in water would be about 3 µg/L (Squillace and others, 1996). Given even higher air concentrations such as 30 ppb-v, the equilibrium concentrations in water would be about 30 µg/L. Elevated concentrations of MTBE in the air immediately surrounding local sources (for example, highways, gasoline stations, parking garages, or refineries) would result in increased concentrations in local precipitation when averaged over months to years.

Can the source of MTBE be determined from the concentration of MTBE and BTEX compounds detected in surface water or ground water?

The concentrations of MTBE and BTEX compounds can lead one to suspect point or nonpoint sources of contamination. Where high concentrations of MTBE and BTEX compounds (greater than 30 $\mu\text{g/L}$) are detected in ground water, the source of contamination is probably a point source, such as a leaking underground storage tank. The concentrations of MTBE from a point source can be high (200 mg/L has been measured in ground water, Garrett and others, 1986).

When small concentrations (0.2 to 3 $\mu\text{g/L}$) of MTBE are detected in ground water, the source of contamination may be a point source but more likely is a nonpoint source such as atmospheric washout. MTBE plumes originating from point-source gasoline releases generally occupy a larger volume of the subsurface compared to BTEX compounds, and concentrations of MTBE at the leading edge of a contaminant plume are low but usually increase with time. Therefore, if small concentrations of MTBE were detected in samples at a location contaminated by a point source, then generally one would expect the concentrations of MTBE and detections of BTEX compounds to increase with time at the same location.



Atmospheric washout and water interaction with contaminated road surfaces are possible nonpoint sources of MTBE to surface water, but the concentrations associated with these sources are generally small. As indicated previously, concentrations of MTBE and BTEX were measured in 592 stormwater samples collected by the U.S. Geological Survey in 16 cities and metropolitan areas required to obtain National Pollutant Discharge Elimination System permits (Delzer and others, 1996). The highest concentration of MTBE was less than 10 $\mu\text{g/L}$ and the sum of BTEX concentrations in each stormwater sample was less than 20 $\mu\text{g/L}$.

What natural processes degrade MTBE and how quickly does degradation occur?

Degradation of an organic compound refers to its transformation by abiotic or biotic reactions. The degradation of organic compounds normally leads to the formation of other organic compounds. The ultimate mineralization (complete breakdown) of an organic compound to carbon dioxide and water can involve many reactions and a long period of time. MTBE can degrade in the atmosphere by various processes including photolysis and reactions with the hydroxyl radical, ozone, and nitrate radicals; recent research indicates that MTBE reaction with the hydroxyl radical is the most prevalent (Smith and others, 1991; Wallington and others, 1988). Biological transformations often provide the predominant decay pathways in water and soil, and the complete mineralization of an organic molecule in water and soil is almost always a consequence of microbial activity (Alexander, 1981; Schnoor and others, 1987).

Estimates of the atmospheric half-life (time required for one half of the amount of the compound to degrade) of MTBE can be as short as 3 days in a regional airshed (Smith and others, 1991; Wallington and others, 1988; Zogorski and others, 1997). This estimated half-life assumes a hydroxyl radical concentration of 10^6 radicals/ cm^3 in the regional airshed. However, concentrations of hydroxyl radical could be lower in air near metropolitan areas and therefore MTBE could resist degradation until advection carries MTBE outside the metropolitan area. The major degradation product of MTBE in the atmosphere is *tert*-butyl formate. Other degradation products include methyl acetate (acetic acid), acetone, *tert*-butyl alcohol, and formaldehyde (Howard and others, 1996).

In water, BTEX compounds undergo biological transformations; however, most studies have indicated that MTBE does not biodegrade easily under various environmental conditions. If a research investigation determines that a compound does not degrade, a half-life is not reported and the compound is simply classified as recalcitrant. MTBE is generally reported as recalcitrant and there are no widely accepted estimates of the half-life. Investigators have reported that MTBE is recalcitrant in anaerobic laboratory studies including denitrifying conditions, sulfate-reducing conditions, methanogenic-reducing conditions, and anaerobic conditions in landfill-affected aquifer material, soils, and sludges (Fujiwara and others, 1984; Jensen and Arvin, 1990; Yeh and Novak, 1991, 1994; Sufliata and Mormile, 1993; Mormile and

others, 1994). Yeh and Novak (1995) also reported that there was no degradation of MTBE in an aerobic laboratory study after more than 100 days of incubation. Nevertheless, degradation of MTBE has been reported on occasion and this indicates that some microorganisms are able to degrade MTBE (Thomas and others, 1988; Daniel, 1995). The degradation of MTBE in ground water can lead to the formation of *tert*-butyl alcohol, which can cause some carcinogenic activity in laboratory animals (Cirvello and others, 1995).

How far can MTBE travel in streams and rivers before it volatilizes?

Although MTBE can volatilize from water, half-lives in rivers and streams can be greater than 1 day, and travel distances range from about 0.8 km for shallow streams to more than 900 km for deep rivers before half of the MTBE is volatilized (Pankow and others, 1996). Ice on rivers and streams will stop all volatilization of MTBE from the water. Factors that affect the volatilization rate of MTBE in surface water include water velocity, water depth, water temperature, wind speed, and air temperature; in many cases, MTBE volatilizes at rates that are most dependent on the depth and velocity of the flow. No single volatilization rate characterizes the loss process from streams and rivers. In deep and slow moving flows, MTBE volatilizes at rates similar to those for the BTEX compounds. In shallow and fast moving flows, MTBE volatilizes at rates that are significantly slower than those for BTEX compounds (Pankow and others, 1996).

How quickly can MTBE enter ground water and how fast can it travel?

Because MTBE tends to stay in the water and not sorb to subsurface solids, it can move to the ground water at almost the same velocity as the recharge water. The downward velocity and travel times of recharge water to the water table is extremely variable throughout the United States and depends on many factors, such as precipitation, evapotranspiration, hydraulic conductivity of the materials in the unsaturated zone, and the thickness of the unsaturated zone. In some areas of the United States, where the depth to water is less than 3 m and the unsaturated zone is permeable, recharge from precipitation can reach the underlying aquifer in a few days or less. In other areas, precipitation falling on the land surface may never reach the underlying aquifer; however, installation of retention ponds and recharge wells for stormwater runoff will increase the rate of ground-water recharge.

Once MTBE is in the ground water, it can move at virtually the same velocity as the water, which is one reason why MTBE plumes generally occupy a large portion of the subsurface compared to BTEX compounds. The ratio of the ground-water velocity to the velocity at which a compound is transported is frequently referred to as the retardation factor, *R*. The actual values of *R* for a particular compound depend on aquifer properties, such as porosity and organic carbon content. A compound that moves at one-half the velocity of the ground water has an *R* value of 2. For MTBE, *R* is fairly close to 1 for typical aquifers whereas the BTEX compounds have *R* values that can range from 1.1 to about 2.0 (Zogorski and others, 1997); physical and chemical characteristics indicate that compound mobilities generally increase in the following order: xylene, ethylbenzene, toluene, benzene, MTBE (Odermatt, 1994).

Ground-water velocities are extremely variable and depend on the permeability, porosity, and hydraulic gradient of the aquifer. Velocities under typical hydraulic gradients can range from a few millimeters per year to a meter per day. Ground-water velocities near a pumping well can be even larger due to the large hydraulic gradients that can exist near these wells.

Are there environmental processes that will concentrate MTBE in water or air?

At this time, there are no known environmental processes that will concentrate MTBE within water or air; however, MTBE will move between air and water until equilibrium is established. Therefore the concentrations of MTBE in air or water can change with time until equilibrium is established. Furthermore, increased use of MTBE can upset established equilibrium by changing the atmospheric concentrations of MTBE; in general, those metropolitan areas where MTBE is used only as an octane enhancer will probably have lower atmospheric concentrations of MTBE than metropolitan areas where MTBE is added to all gasoline sold to meet the requirements of the 1990 Clean Air Act Amendments.

Do other alkyl ether oxygenates behave similarly to MTBE?

There is limited information on the behavior and fate of other alkyl ether oxygenates. However, available

chemical-property data indicate that the solubilities of the other ethers are also high. Therefore, the subsurface retardation factors should be similar to MTBE in a given circumstance. Volatilization rates from water are expected to be similar to MTBE. All these factors indicate that other alkyl ether oxygenates should partition between air, water, and soil similar to MTBE. The expected half-lives of these compounds in air are also similar to MTBE, and their biodegradation is similarly limited (Zogorski and others, 1997).

How easily can MTBE be removed from a drinking water supply?

MTBE's high water solubility and resistance to biodegradation complicates its removal from water. There have been several evaluations of remedial technologies for MTBE, but these have generally indicated low efficiency and high costs for the technologies. For example, Garrett and others (1986) concluded that filtration of MTBE-contaminated ground water through activated carbon was not cost effective; a 0.06-m³ (cubic meter) bed of activated carbon lasts only a month or less on a household treatment system that has an influent concentration of MTBE of only a few milligrams per liter. In other studies, MTBE-contaminated water was remediated, and air stripping with or without carbon adsorption had the lowest treatment costs (International Technology Corporation, 1991; Truong and Parmele, 1992). A recent survey of 15 air stripping installations indicated that 56 to 99.9 percent of the MTBE was removed; the median removal rate was 91 percent (Groundwater Technology Inc., 1990). Because of the relatively low efficiency of air stripping for MTBE, increasing the Henry's Law constant by heating the process water may be a cost-effective approach (Buttilo and others, 1994). Regarding the removal of MTBE from water, heating the air-stripper influent stream to 27 °C over a 9-m column packed with activated carbon was equivalent to using 10°C water and a 18-m column packed with activated carbon. When there can be no air emissions, use of oxidation with ultraviolet light/ozone also is a feasible water-treatment alternative. This approach, however, has high capital and operating costs relative to other treatments (Zogorski and others, 1997).

Hydrogen peroxide, provided initially as a source of oxygen to support microbial degradation, has been found to hydrolyze MTBE with the immediate formation of *tert*-butyl alcohol and some acetone (Yeh and Novak, 1995). The reaction occurred only when iron was added to act as a catalyst for the release of hydroxyl radicals from the hydrogen peroxide. This reaction, however, does not have wide applicability because it is inefficient in aerobic environments or in near-neutral (pH greater than 6.5 standard units) to alkaline environments.

Despite the resistance of MTBE to indigenous bacteria, biotreatment methods might be developed. Recent research has demonstrated that bacterial populations and certain pure bacterial strains, when isolated from biotreated sludges and other sources, have the ability to use MTBE as a sole carbon source (Salanitro and others, 1994; Mo and others, 1995).

References Cited

Additional information on NAWQA and other U.S. Geological Survey programs can be found by accessing the NAWQA "home page" on the World Wide Web at http://www.wrvaes.er.usgs.gov/nawqa/nawqa_home.html.

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Mr. BILIRAKIS. Mr. Shimkus, do you wish to inquire?

Mr. SHIMKUS. Yes, I do.

Mr. BILIRAKIS. The gentleman is recognized for 5 minutes.

Mr. SHIMKUS. A simple question first. The RFG program, has it proven to clean the air? And let's go from Director Skinner on down.

Mr. SKINNER. Yes.

Mr. GRUMET. I will say more than one word. It has been one of the most effective air quality programs that were adopted in the 1990 amendments.

Mr. SHIMKUS. Thank you.

Mr. MILAZZO. From what I am hearing today, I will concur.

Mr. SHIMKUS. It would be safe to say yes.

Second question: Is there any recorded instance of ethanol contributing to pollution of groundwater?

Mr. SKINNER. No.

Mr. GRUMET. Yes. I mean, we want our groundwater to be absolutely pure. It never will be.

Mr. SHIMKUS. Do you have a specific case?

Mr. GRUMET. Certainly. We are aware that ethanol, like any gasoline, is spilled into groundwater.

Mr. SHIMKUS. Do you have a specific location? I mean, Director Skinner has how many locations of groundwater contamination in Illinois?

Mr. SKINNER. Twenty-six MTBE hits, anyway.

Mr. SHIMKUS. How many contributed to ethanol? I am directing my question to Director Skinner now.

Mr. SKINNER. None to ethanol.

Mr. SHIMKUS. Director Skinner, the head of the EPA from Illinois, can answer that question. So my question to you is, name the location of the site that has groundwater pollution on ethanol.

Mr. GRUMET. Sir, I do not have that off the top of my head, but I would be happy to provide you with the sites of ethanol occurring in groundwater. It has occurred in the course of human history. I am agreeing with you.

Mr. SHIMKUS. We will expect a response to this committee based upon your answer.

Mr. Milazzo, based upon your experience, did you notice any?

Mr. MILAZZO. I do not think the Water Authority has. And it is my understanding there is not that much ethanol being used in Long Island in the gasoline. I can find out for sure.

Mr. SHIMKUS. Director Skinner, would you characterize the ethanol program in Chicago a success?

Mr. SKINNER. Yes.

Mr. SHIMKUS. Has there been any incidence of water contamination in Chicago from RFG?

Mr. SKINNER. No, not to my knowledge.

Mr. SHIMKUS. Can you give us a perspective of the groundwater debate, since Illinois is a predominantly ethanol oxygen State? The issue I want to address here is we have got two environmental issues, groundwater contamination, that is MTBE, and air quality, which is a positive oxygenate program with an ethanol mix. Can you tell us how, in Illinois, from your experience as the director of the EPA, proportionally how we fare.

Mr. SKINNER. Well, I think that Mr. Grumet is making a point that, if fully elaborated on, I would not disagree with, which is, if there is a gasoline spill of gasoline containing ethanol, then there would be ethanol showing up in the results.

The difference between MTBE and ethanol, though, is that MTBE is much more soluble, it is much more pervasive, and it lasts much longer in the water supply. Therefore, it is much harder to clean.

So you will always have gasoline spills, but it is much worse if you have a gasoline spill with MTBE.

Mr. SHIMKUS. You meant to say gasoline with MTBE.

Mr. SKINNER. If you have a gasoline spill with MTBE in it, it is much worse than a gasoline spill with ethanol in it because it lasts much longer and it is much more expensive to resolve.

The answer to your immediate question is, no, in the Chicago RFG area, while there have been gasoline spills I am sure, we have not had a particular problem with remediation because it contains ethanol rather than MTBE.

Mr. SHIMKUS. Let me go back to Mr. Grumet. I do not want to really get into an argument.

What about the question of remediation versus gasoline with an ethanol additive?

Mr. GRUMET. I would like to thank Director Skinner and say I entirely agree with the thrust of your question. In groundwater, hands down, ethanol is the winner. In air quality it is not so clear; and, in fact, in air quality we think there are liabilities.

Mr. SHIMKUS. I am not trying to debate the benefits of MTBE and ethanol and air quality.

The reality is they both create significant benefits for air quality. MTBE is disadvantageous to the groundwater supply if spilled.

Mr. GRUMET. If you are trying to raise the comprehensive question, which is obviously all of our goal is to protect both air quality and groundwater simultaneously, ethanol has actual liabilities in the summertime use because of volatility. So ethanol can actually, while it has other benefits, create liabilities to air quality.

Mr. SHIMKUS. I would request that you stick around for the next panel because I think that Dr. Graboski can answer some of those questions, being a qualified scientist in that area.

Let me just ask the final question, and it is kind of the same question I asked at the end of the last panel. And it was asked by Dr. Ganske, the backsliding issue.

Are you concerned about the aromatics being the new inclusive ingredient to raise the standards, which, in essence, would create a dirtier environment for air?

Mr. GRUMET. Absolutely. That is probably one of our most significant concerns. If we do not enhance the toxic standards in RFG and do nothing with the oxygen mandate, we expect that that will happen, that highly toxic aromatics, because they are the most economical and available source, will come into the fuel supply.

There are two approaches we suggest you use to address that. You can cap aromatics, which would be very effective but not very flexible, or you can enhance the toxic standard to make certain that it is not possible to use any compound that would make gasoline more toxic. Either approach I think is viable.

Mr. SKINNER. We think that the solution exists out there. I do not know whether that approach is feasible or not. It is not something that I have particularly looked at. I may be able to get you an answer from our staff on that.

But the fact of the matter is we think ethanol is a perfect substitute. The question becomes, if you are not going to allow the aromatics in there, you are not going to require oxygenates in there, what is it that is going to be placed into the gasoline? And I do not think we know the answer to that question.

Mr. SHIMKUS. Thank you, Mr. Chairman. I yield back my time.

Mr. BILIRAKIS. I thank each of the panelists for your very excellent contribution to our hearing today. You are excused.

We call, at long last, the fourth panel, beginning with Mr. Robert H. Campbell, chairman and chief executive officer of Sunoco, Inc.; Dr. Michael S. Graboski, director of CIPHER Institute, Department of Chemical Engineering, Colorado School of Mines; Mr. A. Blakeman Early, environmental consultant, American Lung Association; Mr. Dale O. Young, director, Oxygenated Fuels Business, Lyondell Chemical; Mr. Eric Vaughn, president and chief executive officer of Renewable Fuels Association; and Mr. Barry Grossman, founder of Oxybusters.

Gentleman, we welcome all of you. We apologize for keeping you waiting for 3½ hours for your opportunity to testify, and we are glad that you all were able to stay with us.

We turn first to Mr. Campbell for your 5 minutes of statement, please.

STATEMENTS OF ROBERT H. CAMPBELL, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, SUNOCO, INC.; MICHAEL S. GRABOSKI, DIRECTOR, CIPHER INSTITUTE, DEPARTMENT OF CHEMICAL ENGINEERING, COLORADO SCHOOL OF MINES, ALDERSON HALL; A. BLAKEMAN EARLY, ENVIRONMENTAL CONSULTANT, AMERICAN LUNG ASSOCIATION; DALE O. YOUNG, DIRECTOR, OXYGENATED FUELS BUSINESS, LYONDELL CHEMICAL; ERIC VAUGHN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, RENEWABLE FUELS ASSOCIATION; AND BARRY GROSSMAN, FOUNDER, OXYBUSTERS

Mr. CAMPBELL. Mr. Chairman, I, first of all, want to thank the committee for inviting me to be with you today.

Rather than read my prepared statements, which I think you already have on file, what I would like to do is take the time available to me to address three points.

The first point: What is the best path out of the current dilemma? My answer to that question is to reiterate my support of the recommendations of the blue ribbon panel.

David Greenbaum and Bob Perciasepe did a great job, in my opinion, in crafting a reasonable approach from very diverse interests.

As you know, the recommendations increase public awareness of handling gasoline; eliminate the 2-percent mandate; preserve the existing air toxic improvements; phase down and cap MTBE use, but do it in a timeframe that assures adequate fuel supply.

I also believe that the bill filed last year by Congressman Greenwood captures very well the key elements that the panel raised.

And that bill also supports the principals being promoted by NESCAUM, various environmental groups, and the petroleum refining industry. It is certainly my hope that this committee will be able to support Congressman Greenwood's bill.

My second point: when you are addressing the gasoline composition issue, also keep in mind the need to reduce the instance of leaking underground storage tanks, the main remaining source, I believe.

As we know, there has been an EPA program begun in 1988 to upgrade, replace, or close the approximately 2 million underground fuel storage tanks. The vast majority of petroleum companies, including my own, completed the program ahead of schedule at a cost of billions of dollars.

Today, the 2 million tanks have been reduced to approximately 825,000. Unfortunately, EPA estimates that between 80,000 and 150,000 tanks have not been upgraded, removed, or replaced even though the deadline has passed.

Simple logic demands that noncompliant tanks be replaced in an expedited manner, beginning with tanks in the RFG areas where MTBEs are most prevalent.

I know some of those tanks and the businesses that own them are small. But I will tell you, from extensive personal experience, that the size of the tank is of little consequence when a leak occurs. A small leak over a long period of time from even a very small tank in continuous service can adversely impact a large area of real estate.

Frankly, I personally believe that anyone that cannot afford to upgrade the tanks and put in place an inventory control and monitoring program should not be in the business.

My third and final point: I believe that most people agree that MTBE in gasoline needs to be drastically reduced. The critical question is, how do you go about doing it constructively?

Let me reiterate that I believe that we can produce low-oxygen-content gasoline or even oxygen-free gasoline and still achieve or exceed the air toxics emissions standards in existence. But if the transition is not done constructively, I believe that it will have very serious supply and/or gasoline price issues.

It took us 10 years to get to our current condition, and it cannot be corrected overnight. But I believe that if the mandate is removed and refiners are given flexibility that they have been asking for, the competitive free-market system will drive down MTBE out of gasoline faster than most people now consider likely.

I believe that most refiners will ultimately want to advertise that, "our gasoline is MTBE free." There is nothing to be gained by saying, "our gasoline has less MTBE this area than it did last year."

Currently, with the mandate in place, most manufacturers of RFG are required, as a practical matter, to continue blending MTBE into the gasoline. We have no practical alternative. But with the mandate gone, I believe that most refiners will want to expedite its removal, if for no other reason but to minimize liability.

But please make no mistake about it, replacing 250,000 barrels a day of MTBE with anything, anything, is going to take time and investment on the part of the industry. This is not a trivial issue.

My greatest concern is that the result of all this national debate will be to leave the mandate in place and simply ban MTBE, which is effective, of course, a mandate for ethanol in RFG gasoline. I personally believe that to eliminate one mandate that has turned out to be problematic and replace it with another or try to legislate some complex, phased-down schedule will simply result in a situation that will need to be corrected again in the future.

What I am, basically, asking you to do is tell us the goal you want achieved, tell us the environmental standard you believe is necessary, and let this very competitive industry that I am involved in achieve it in the most cost-effective manner. I truly believe we have proven our ability to do that over the years in the past.

Once again, Mr. Chairman, I thank you for the opportunity to speak to you today.

[The prepared statement of Robert H. Campbell follows:]

PREPARED STATEMENT OF ROBERT H. CAMPBELL, CHAIRMAN AND CEO OF SUNOCO, INC.

Good morning Mr. Chairman and members of the committee. My name is Bob Campbell and I am chairman and ceo of SUNOCO Inc.—a company that is one of the largest refiners and marketers of gasoline on the east coast of the U.S.

As you may know, last year I served on the EPA's blue ribbon panel on oxygenates and gasoline, I testified before the U.S. Senate Environment and Public Works Subcommittee on clean air, and I have had several opportunities to speak publicly on what steps I felt needed to be taken to address the growing public concern about the use of MTBE in gasoline. At every opportunity, I have strongly endorsed the recommendations of the EPA panel, and I urge you today to take whatever steps are necessary to implement those recommendations.

The continued use of MTBE in gasoline is a technically and politically complex issue with much at stake. The EPA panel formed to address the problem had representatives from all of the major constituencies involved, and after much discussion and debate, that panel published a set of recommendations that addresses both the long and short term steps required to solve the problem.

It is probably safe to say that no one on that diverse panel was 100% satisfied with the finished product. But the vast majority of the members felt that a workable solution had been derived and were in support of the recommendations. The fact that we could reach any semblance of agreement on such a complex and contentious issue is a tribute to Dr. Dan Greenbaum of the health effects institute who chaired the blue ribbon panel and guided our deliberations.

One of the most critical elements in the series of panel recommendations involves the repeal of the 2% oxygen mandate imposed by Congress in 1990 for reformulated gasoline. As long as that mandate is in place, most of the refining industry is required as a practical matter to continue blending MTBE into gasoline and distribute it in many of the large populated areas of this country.

Today (10 years after the mandate was first imposed) the combination of new fuel formulation and evolving automotive technology enables us in the refining industry to produce cleaner burning fuels without oxygenates at the mandated level. In fact we believe in the north eastern United States we can commit to producing gasoline which will achieve an even greater level of toxics reduction than is currently mandated by EPA for the year 2000 RFG.

As I said, I realize that there are powerful forces that want the mandate retained, but the key to no longer adding to the existing environmental problem is to give our industry the flexibility to meet the performance standards we originally asked for 10 years ago. The EPA panel published their recommendations on July 27, 1999. Since that point in time, our industry has blended 2.5 billion gallons of MTBE to produce almost 25 billion gallons of oxygenated gasoline. Every day the mandate remains in place and the problem goes unaddressed, we blend another 11.5 million gallons of MTBE to produce 115 million gallons of oxygenated gasoline. It is small wonder that the general population is upset, and the individual states are starting to take unilateral action. We need your help to address this issue on a coordinated, national basis.

I believe the bill filed last fall by Congressman Jim Greenwood captures very well the elements of the blue ribbon panel's recommendations:

- Eliminate the 2% oxygen mandate
- Preserve existing air toxics improvements
- Phase down and cap MTBE use
- But do it in a time frame that assures adequate fuel supply (an immediate ban will absolutely have gasoline supply implications)

Let me add that Mr. Greenwood's bill also addresses most of the legislative principles being promoted by NESCAUM, environmental groups and the refining industry. It is certainly my hope that this committee will be able to support Congressman Greenwood's bill.

But the use of MTBE in gasoline is only a part of the problem. The second, and in my opinion equally serious issue is the continued existence of leaking underground storage tanks. In 1988 EPA announced a 10-year program to upgrade, replace, or close the approximately 2 million underground fuel storage tanks. To not comply with this program meant the imposition of very serious penalties, and the vast majority of petroleum companies (including my own) completed the program ahead of schedule. Today the 2 million tanks have been reduced to 825,000 regulated tanks. Unfortunately EPA estimates that of those 825,000 regulated tanks there are between 80,000 and 150,000 tanks that have not been upgraded, removed or replaced even though the deadline has passed. It's a pretty safe bet that many of those tanks are adding to this growing national groundwater problem. Most of the non-compliant tanks are owned by state or federal governments, small independent service stations, farmers and other small businesses. Simple logic demands that non-compliant tanks be replaced in an expedited manner beginning with the gasoline tanks in rfg areas where MTBE is most prevalent.

I realize that many of these tanks and businesses are small. But I will tell you from extensive personal experience that the size of the tank is of little consequence when a leak occurs. A very small leak over a long period of time from a tank in continuous service can adversely impact a large area of real estate.

Ladies and gentlemen it is my firm belief that today we have a growing national problem, that is an unintended consequence of people trying to do the right thing 10 years ago. I urge you to support the legislation being proposed by congressman greenwood and in addition address the problem of non-compliant and exempt underground storage tanks.

Thank you for the opportunity to testify.

Mr. BILIRAKIS. Thank you, Mr. Campbell, for your testimony.

We turn now to Dr. Graboski for his testimony.

STATEMENT OF MICHAEL S. GRABOSKI

Mr. GRABOSKI. Mr. Chairman, I am Mike Graboski from the Colorado School of Mines. I have provided some detailed written material in my statement for today; and so, as Mr. Campbell has done, what I would like to do is just try to briefly summarize what I have to say and leave you to study the details.

We have heard a great deal of discussion about the value of oxygenates in gasoline and the ability to make gasoline that is non-oxygenated. My interest in talking to you today is that, in any legislative change you might make to the RFG program, that we preserve the public health benefits that the current program provides.

In my mind, protecting public health means that we cannot have any backsliding in terms of future emissions from RFG compared to those today.

Now, RFG currently is certified in terms of certain mass-base standard. We add up all the toxics, we add up all the VOCs, and we say, are these emissions comparable or better than the required standards? But when we talk about anti-backsliding, we need to consider some other issues; and these issues are, will the new fuel produce the same amount of ozone when the emissions are admitted to the atmosphere or more or less? And anti-backsliding would mean the same or less.

How about potency-weighted toxics? Potency means the tendency of these things to cause cancer after long-term exposure. All of these materials are not the same. Benzene is far worse as a toxic than, for example, acid aldehyde or formaldehyde; but in the Clean Air Act, for gasoline purposes, they are counted the same.

How about carbon monoxide? Carbon monoxide is a pollutant that is named as a criteria pollutant. And finally, how about the emissions of fine particulate matter from vehicles? We are learning more and more that today, in terms of studies, that as you get oxygenates into gasoline, particulate matter goes down and that, as you add things like aromatics into gasoline, particulate matter goes up.

So my interest is trying to make sure that when you do what you have to do, you create a situation that is environmentally neutral compared to today, however that standard is crafted, and not rely on the performance standards of the Clean Air Act, but rely on a combination of the general requirements of the Clean Air Act and the performance standards.

The general requirements talk about using oxygenation, permissible benzene levels, taking lead and metals out of gasoline; and the performance standards talk about hydrocarbons and toxics and NO_x .

When I read the Clean Air Act, I read these things together and I say, the Clean Air Act is providing performance standards and de facto performance standards. The de facto performance standards are the things that these general requirements give me.

Even if the Congress did not know what oxygenates were going to do, we found from science since 1990 that there are quantifiable benefits from oxygenates. Now that we have them, let's make sure that if we recraft the Clean Air Act section that has to do with reformulated gasoline, we make sure that we get the benefits of these general requirements built into the regulation, into the law. And that is really what we are talking about in terms of anti-backsliding.

When one puts oxygenates in gasoline—and I am not here to talk about ethanol or MTBE separately, I am talking about oxygenates, I am not a water person—the things that we find are that, in general, there are fewer aromatics in gasoline; we get a lower potency-weighted toxics emissions and, thus, a lower long-term cancer risk; we reduce emissions of carbon dioxide; we reduce ozone at least due to carbon monoxide and partly due to fuel reformulation; and we get less fine particulate in-exhaust emissions.

People have talked today a little bit about aromatics. There is a lot of experience in the past in terms of aromatics. At the time we phased down lead, the first thing that happened in gasoline is the aromatic content went up and the national average content reached about 34 percent. Since we have put oxygenates in, the national average aromatic contents fall into about 26 percent. This tradeoff, which is almost volume for volume, is logical because the octane contents of these things are very, very similar. The refiners are trying to produce a gasoline that meets an octane specification. If he takes something out with high octane, he has to put something else in.

Aromatics scare me, for a couple of reasons. First of all, they are highly toxic and, like benzene, they are known to be human carcinogens. Increasing aromatics themselves in fuels increases benzene in the exhaust. That is known.

The EPA complex model also suggests that increasing the hydrocarbon portion of the fuel, taking oxygenates out, will increase things called polynuclear aromatic hydrocarbons, which are very, very carcinogenic relative even to benzene. And there is a lot of research around now that shows that adding oxygenates in will reduce PNAs, putting aromatics in fuels will increase PNAs. So this is a danger, I believe.

Mr. BILIRAKIS. Mr. Graboski, if you could summarize.

Mr. GRABOSKI. Absolutely.

Refiners are going to replace oxygenates with aromatics and whether they do that that is going to make a more toxic gasoline.

I could talk about some of these other issues, but one I would just summarize on is particulate matter. I would like to point out that 80 percent of the Clean Air Act benefits attributable since the beginning of the Clean Air Act are due to reductions in particulates.

I think that changing a rule that would increase aromatics and decrease oxygenates will increase particulate matter, and that would be negative as far as public health is concerned.

If the panel is interested in the future, I would be very, very glad to work with the panel and others here in order to provide more in detail scientific input into these issues. And so, with that, I will pass.

[The prepared statement of Michael S. Graboski follows:]

PREPARED STATEMENT OF MICHAEL S. GRABOSKI, DIRECTOR, COLORADO INSTITUTE FOR FUELS AND HIGH ALTITUDE ENGINE RESEARCH, COLORADO SCHOOL OF MINES ON BEHALF OF THE NATIONAL CORN GROWERS ASSOCIATION

Mr. Chairman, my name is Michael Graboski, I am Director of the Colorado Institute for Fuels and High Altitude Engine Research and a Professor of Chemical Engineering in the Department of Chemical Engineering and Petroleum Refining at the Colorado School of Mines. I am testifying here today on behalf of the National Corn Growers Association as an expert in the effects of adding oxygenates to gasoline. I have submitted a technical paper to the Committee that documents the arguments I have been making on the efficacy of the oxygen standard in the federal reformulated gasoline (RFG) program. I will summarize my arguments for you and the Members of the Subcommittee, but ask that the full text of my paper be included in the hearing record.

Mr. Chairman, you have heard a great deal of discussion about the value of oxygenates in gasoline from many points of view. I have analyzed this problem by looking at actual fuels that are being sold today using the certification tools that refiners and regulators use. That is, I have looked at fuels that are being sold as certified RFG or conventional gasoline, and I am using EPA's complex model to determine the effects of changes in fuel oxygen content on fuel quality and emissions.

The Benefits of Oxygen in Fuel

The Clean Air Act sets forth both *general requirements* and *performance standards* for RFG. These are provided in section 211(k)(2) and section 211(k)(3) respectively. The *general requirements* include provisions for limiting nitrogen oxide emissions from vehicles using RFG, require the use of oxygenate, specify permissible benzene content, and they prohibit heavy metal additives in RFG. The *performance standards* require specified minimum mass-based reductions of hydrocarbon (VOC) and air toxic emissions. This means that refiners must make specific reductions in the tons of VOC and toxic emissions without regard to their ozone-forming potential or cancer potency.

Both 211(k)(2) and 211 (k)(3) define fuel performance standards. There are air quality and public health benefits that are implicit in the general requirements in addition to those that are explicit in the performance requirements. Specifically with respect to the oxygen requirement, the implicit environmental performance is related to the benefits accruing directly from the use of oxygenates and those that result from the effect oxygenates have on the composition of gasoline. In quantifying the full environmental benefits of the RFG program, the effects of both the *general requirements* and *performance standards* of Section 211(k) of the Clean Air Act must be considered.

The following long-term environmental and public health benefits result from the use of oxygenates, both ethanol and MTBE, in RFG when compared with gasoline that meets the mass-based RFG performance standards but is produced without oxygenates:

- Fewer aromatics in gasoline
- Lower Potency weighted toxic emissions and thus lower long term cancer risk
- Reduced emissions of carbon monoxide
- Reduced ozone due to carbon monoxide
- Fewer fine particles in exhaust emissions

I would like to use the remainder of my presentation to discuss some of these benefits.

The Impact of Oxygenates on the Refining Processes:

Oxygenates add octane to gasoline, something essential for the smooth operation of spark-ignition engines. Aromatics also provide octane in gasoline, though not as much per unit as oxygenates. When refiners put oxygenates into gasoline they reduce the aromatic content of the fuel so that they produce a fuel with the proper octane specification. Therefore, oxygenates are good substitutes for aromatics. The tradeoff between aromatics and oxygenates is well documented in historical gasoline surveys.

In my paper, I discuss the sources of aromatics within the refinery and how refiners may wish to use these sources. However, there are two important things to note from this discussion. First, aromatic compounds are highly toxic and many like benzene are known human carcinogens. The toxic potency of aromatics and their combustion byproducts are, in many cases, orders of magnitude greater than the potency of oxygenates or their combustion byproducts. Second, refiners will replace oxygenates with aromatics if they can and this will result in more toxic gasoline on a potency-weighted basis. All toxics are not created equal, but the mass-based standard of the Clean Air Act treats them as equal. Mr. Chairman, let me be clear, the oxygen requirement in RFG has a real and substantial benefit because clean-burning oxygenates are substitutes for highly toxic aromatics.

Reducing Carbon Monoxide Emissions

Most ambient CO is generated by mobile sources. Carbon monoxide is a criteria pollutant. EPA is currently reviewing the CO standard to determine its adequacy to protect public health. CO also is an important summer ozone precursor. Recently the National Research Council¹ has suggested that CO emissions be treated as an important factor in assessing the impact of fuel formulation on ozone. CO reductions are another implicit benefit of oxygenates in RFG because they are not accounted for in the calculations used to certify RFG.

The National Research Council² also reported that oxygenates could be responsible for a 10% reduction in ambient CO a Clean Air Act criteria pollutant. In addition, CO emissions are highly correlated with other products of combustion, particularly VOC (hydrocarbon) emissions and fine particulate matter (PM_{2.5}). Including oxygen in gasoline reduces both summer and winter CO emissions. The reduction in CO is 15% or more for 3.5% oxygen. Increasing aromatics in gasoline to offset loss of octane from oxygenates may increase CO emissions and eliminate the direct and indirect benefits of these reductions.

Carbon monoxide affects ozone formation during the summer. I have used the EPA Complex Model to calculate potential ozone effects that could occur if oxygenates were removed from gasoline and replaced with aromatics. Based on my analysis, the potential to form ozone is higher for non-oxygenated fuels. Considering CO effects only, the ozone reduction benefit of using a 3.5% oxygen provided by an ethanol blend with 26% aromatics compared to a non-oxygenated fuel with 34% aro-

¹NRC, "Ozone Forming potential of reformulated Gasoline", National Academy Press, Wash DC, 1999.

²NRC, "Toxicological and Performance Aspects of Oxygenated Motor Vehicle Fuels," 1996.

atics is nearly 5%. This represents about 50% of the incremental benefits of phase 2 RFG compared to phase 1 RFG.

Particulate Matter Emissions:

Particulate matter, especially fine particles ($PM_{2.5}$) is emitted directly in automotive exhaust. In addition, other exhaust products react in the atmosphere to produce secondary particulate. More than 80% of the cumulative Clean Air Act benefits have been found to be associated with the reduction of fine particulate. Oxygenates are known to reduce primary particulate emissions. Because there are explicit regulations in RFG that control emissions that contribute to the formation of secondary particulate, adding oxygenates to gasoline has little or no demonstrated effect on secondary particulate. Thus, removing oxygenates will increase primary PM. there is a risk that overall PM will increase with a reduction in the use of oxygenates in gasoline.

Summary

Based on the available data, it is my conclusion that the benefits of using oxygenates in gasoline are clear. The oxygen requirement has provided implicit benefits in the RFG program that are not currently accounted for in the RFG certification process. Aromatics in gasoline are reduced leading to significant reductions in the toxic potency of emissions. Carbon monoxide emissions that contribute to ozone formation are reduced significantly. Particulate matter emissions are reduced. Eliminating the RFG oxygen requirement will lead to greater use of aromatics in gasoline reducing public health and welfare.

I recognize that today's concern with MTBE is posing serious policy questions for the Committee. In my opinion, the benefits of adding oxygenates to gasoline are clear. I would be willing to work with you and Members of the Committee on any technical matters as you wrestle with the policy implications of addressing the groundwater pollution problem associated with MTBE. What is most important in my view is that we continue to achieve the objectives of the Clean Air Act.

Mr. BILIRAKIS. Thank you very much for that offer. We appreciate that.

Mr. Early.

STATEMENT OF A. BLAKEMAN EARLY

Mr. EARLY. Good afternoon, Mr. Chairman. My name is Blakeman Early. I am here on behalf of the American Lung Association and am very happy to be here. And I, too, will try not to take up too much of the committee's time and summarize my testimony.

I am here principally for one reason, and it is to emphasize to you how important it is for this committee to join with a very disparate group of organizations in support of the Blue Ribbon Panel principles for legislation.

You have already heard Mr. Campbell talk about it, but I ask you, when was the last time you had an opportunity to adopt legislation and incorporated principles supported by State air regulators, the Natural Resources Defense Council, the American Lung Association, and the American Petroleum Institute? This does not happen very often.

We believe that the Blue Ribbon Panel recommendations are a moderate, very practical way to solve some very significant problems in terms of threats to our groundwater while maintaining actual air quality benefits in reformulated gasoline.

We believe those principles are very important. I want to emphasize that repealing the 2-percent oxygen requirement we think is a very important element of those principles. It allows us to drastically reduce MTBE in reformulated gasoline. It allows refiners to actually produce a gasoline that is cleaner than the gasoline being produced today, which is one of the things that the California Air

Resources Board is mandating and trying to get done in California, and the 2-percent oxygen mandate they believe is preventing them from doing that.

Keeping the 2-percent mandate and banning MTBE we think from an air quality perspective—and we urge the committee to look at this question from an air quality perspective—is not the best way to maintain and enhance the air quality benefits from reformulated gasoline.

Refiners should be allowed to use as much or as little ethanol as they may want to use, but keeping the 2-percent mandate and banning MTBE is essentially an ethanol mandate; and we do not believe that that is in the best interest of air quality.

We believe also that Congress must phase down and cap MTBE in all gasoline and also provide the authority to regulate MTBE out of existence in all gasoline, not just reformulated gasoline.

And we do support the call Mr. Campbell has just made for adequate lead time to the refiners to make changes, taking MTBE down, and finding a way to continue to provide air quality benefits in reformulated gasoline.

At the back of my testimony are a couple of examples of new technologies that are already being offered for sale to refiners to allow them to convert their MTBE facilities to produce alcoholates. Alcoholates are one of the substitutes for MTBE that the Blue Ribbon Panel heard testimony and evidence on that hold a lot of promise, although, I have to say, alcoholates, like many other components of gasoline, have not been well tested in terms of their total public health impacts. And one of the important elements of the Blue Ribbon Panel's recommendations is to get this testing and research on all different components of gasoline, the substitutes for oxygenates and oxygenates themselves, get this underway so that we do not make the same mistake again.

One of the major benefits of removing the oxygen mandate, in our opinion, is it allows California to once again show the clean air road map for the future. California's reformulated gasoline is already cleaner than Federal reformulated gasoline. California, of course, has a very serious air pollution problem; and they are seeking to make it even cleaner by producing another generation of reformulated gasoline that is even cleaner than the generation they are using today. The evidence that they have presented convinces us that the oxygen mandate gets in the way of them doing that.

With respect to the waiver that was discussed earlier today, one of the things that we want to emphasize is that, both by State law and by the Clean Air Act, California has an obligation of meeting the national air quality standards as expeditiously as practicable. If they cannot produce as clean a gasoline as they require, that gets in the way of meeting that requirement. So we believe that the waiver should be granted. But, really, the simple solution is to waive the oxygen mandate.

I think that pretty much concludes my major remarks. We see a way of fixing these problems in reformulated gasoline while being able to deliver on the air quality benefits, and we urge this committee to take the principles as that way and move forward as soon as you can.

Thank you.

[The prepared statement of A. Blakeman Early follows:]

PREPARED STATEMENT OF A. BLAKEMAN EARLY, ENVIRONMENTAL CONSULTANT,
AMERICAN LUNG ASSOCIATION

Mr. Chairman and members of the Sub-committee. Thank you for the opportunity to discuss with you the federal reformulated gasoline (RFG) program. You have already received testimony from other witnesses substantiating the significant air quality benefits being provided by this program. I will not review those issues but observe that these benefits have too often been ignored by the media as they focus on almost exclusively on water contamination issues. The American Lung Association has long supported the RFG program as one of the most effective programs implemented to date that were adopted in the Clean Air Act Amendments of 1990. We do, however, share the concern of all Americans that the nation's water quality be protected. It is important to realize that few of the other air pollution reduction efforts emanating from the 1990 Amendments have contributed more to the emissions reduction than the RFG program.

The RFG and the oxy-fuels program have been plagued with controversy about effectiveness, cost, and the growing problem of MTBE contamination of surface and ground water. The American Lung Association believes it is time to modernize the RFG program, and make necessary changes. These changes must be made based on what is needed to maintain and enhance the air quality benefits of the RFG program while reducing the environmental and health threats posed by constituents of gasoline leaking into surface and groundwater. A secondary goal should be to reduce the level of controversy surrounding this program so that it can contribute more to the protection of public health. We believe the recommendations of the Blue Ribbon Panel represent the best way of achieving those goals. The American Lung Association was a member of the Blue Ribbon Panel and we support all of the Panel recommendations, not just those relating to the Clean Air Act. Many of these measures focus on protecting groundwater from leaking gasoline and increasing protections for public and private drinking water sources. Another important component focuses on conducting additional research on the health and environmental impacts of constituents of gasoline, including oxygenates and chemical compounds that might be substituted for oxygenates. The testimony of Dr. Greenbaum, Chairman of the Blue Ribbon Panel, provides an excellent explanation of the recommendations and how they were arrived at. We urge Congress to take appropriate action in support of the other recommendations of the Blue Ribbon Panel. Let me turn to changes the American Lung Association believes are needed to the Clean Air Act that are based on what is necessary to preserve and enhance actual air quality benefits achieved by the RFG program.

The American Lung Association and the Natural Resources Defense Council have endorsed the legislative principles presented by Mr. Grumet on the previous panel. These principles have also been endorsed by Mr. Campbell and the American Petroleum Institute. These disparate interests have come together around these principles for legislative change after extensive examination of the problem and identifying achievable changes that will improve the RFG program. These recommendations make sense. It is rare that members of this committee get an opportunity to embrace a legislative proposal supported by many members of the oil industry, health and environmental organizations, and a group that represents the bulk of state air regulators who actually implement the RFG program. We urge you to embrace them, as well.

Congress must increase the minimum reduction in air toxics required for RFG to reflect the actual reductions achieved by RFG fuels in 1998 and 1999. A major weakness in the current law is that faced with a regulatory or congressional mandate to reduce or eliminate MTBE, refiners are likely to produce a fuel that will produce more air toxics emissions than the fuel produced today. Using EPA's updated complex model, I understand refiners are achieving a 26-27 percent reduction in air toxics when Phase 2 of the law only requires a 22 percent reduction from the 1990 baseline gasoline. Given the growing body of evidence demonstrating mobile source emissions to be a major contributor to air toxics exposure, Congress must act to make sure we do not slip backwards in the effort to reduce air toxic emissions from cars and trucks through the use of cleaner fuels. It is important that I reiterate that the API shares our support of this principal.

Congress must repeal the two percent oxygen mandate for RFG in the Clean Air Act. It is clear that the oxygen mandate is driving the extensive use of MTBE and that this use represents a growing and unacceptable threat to water resources, particularly those relied on for drinking water. We have learned much more about making cleaner gasoline than we knew when the RFG program was enacted in 1990.

While adding oxygen can help refiners meet air pollution reduction goals, it is by no means the only way, or even among the most important ways, to achieve such results.

Some people are advocating the banning of MTBE in RFG to protect water while maintaining the oxygen mandate. The American Lung Association does not believe that this approach would provide the best assurance that the RFG program would maintain air quality benefits. Such an approach would lock refiners into using between 5.7% and 10% ethanol in all RFG across the nation. We believe refiners can best maintain or enhance air quality benefits by being allowed to use as much or as little ethanol as they choose. This flexibility will best enable them to transition to new RFG formulas that are not dependent on MTBE and meet air quality goals with a minimum disruption to supply and price. The American Lung Association finds no compelling air quality related basis that would justify the daunting effort needed to produce, transport, store, and splash blend between 7.8 and 13 million gallons per day of ethanol in the nation's entire national RFG supply.¹ This represents an increase of between 55 percent and 160 percent of the national ethanol production, assuming every drop was devoted to use in RFG. Indeed, as discussed below, the California Air Resources Board has provided evidence that requiring ethanol in RFG actually impedes the ability of refiners to produce a new generation of cleaner fuel that would increase emissions reductions and air quality benefits.

The American Lung Association supports phasing down and capping MTBE in all gasoline, not just RFG. We also support Congress providing clear authority to enable EPA and the States to further regulate or eliminate MTBE in gasoline if necessary to protect public health or the environment. Evidence provided to the Blue Ribbon Panel convinced us that at a minimum, a dramatic reduction in MTBE use, back to pre-RFG levels, is needed as a first step to protect water resources from further MTBE contamination. We would support elimination of MTBE in fuel if further research demonstrates the need. Allowing use of MTBE for octane in the short term in smaller quantities appears to be prudent step as refiners transition to new RFG formulas.

Finally, as I have already discussed, the American Lung Association support the concept of providing adequate lead time to the petroleum industry to make the necessary changes consistent with the other changes we recommend. We fear that precipitous change could lead to supply disruptions or price spikes in various RFG program areas. This may lead to more air pollution and it also would continue to embroil the RFG program in continuing controversy which erodes public support for an overall meritorious air quality program. The question of how long the industry needs for a smooth transition needs some examination. We note that two companies have already announced the introduction of new technologies that can be used to modify MTBE production facilities to produce alkylates at relatively low cost. The Blue Ribbon Panel identified alkylates, which are already an existing component of gasoline, as a potential substitute for MTBE. Alkylates are low in volatility and are not soluble in groundwater like MTBE. But alkylates are just as poisonous as many other components of gasoline. The American Lung Association cautions that Congress must take the Blue Ribbon Panel recommendation for significant new research on MTBE substitutes seriously so that we can avoid creating new unanticipated health or environmental problems as the refining industry transitions to MTBE-free RFG formulas. I have appended two press articles regarding the conversion technologies for modifying MTBE facilities.

In conclusion, we know that RFG can be made that maintains the air quality benefits of currently produced fuels, while dramatically reducing the potential threat to water resources. It is being produced today in California. As you know, California has lead the nation in requiring cleaner fuels for many years. Both oxygen-free and MTBE-free fuels are being produced in California today that meet or exceed the current air quality goals of the federal RFG program. But the governor of California has asked for a waiver of the federal oxygen requirement so that he can require refiners to produce fuels that achieve even more reduction of air pollution than today's fuels. CARB asserts that a CalRFG3 without mandatory oxygen provided by ethanol can achieve greater reductions of Nox and air toxics, and VOCs than a fuel meeting 2 percent oxygen using ethanol. CARB tested a fuel composed of CalRFG with 10 percent ethanol and waiving the volatility limit that would normally apply in a dozen automobiles. It found Nox increased 10-12percent, total hydrocarbon increased 10 to 15 percent and total toxics increased by 9 percent.² Of course this fuel could never be sold in California. Refiners would be required to adjust their refining

¹ See Report of the Blue Ribbon Panel on Oxygenates in Gasoline, September, 1999, p. 69.

² See Proposed Determination Pursuant to Health and Safety Code Section 43830(g) of the Ozone Forming Potential of Elevated RVP Gasoline Containing 10 Percent Ethanol

process to compensate for these increases which they can and are doing in some cases. The point is that if all refiners were required to make these adjustments because they have to use ethanol in their RFG, they can not be additionally be required to actually improve the fuel and make it even cleaner. There is little doubt that in California, to the extent CARB can obtain additional reductions from an even cleaner fuel, they clearly need to do so in order to achieve the national ambient air quality standards. This is why CARB in December 1999 in fact adopted tighter fuel parameters referred to as CalRFG3.

The American Lung Association believes that the experts at CARB know more about producing clean fuels than any other governmental entity, bar none. If Congress to removes the oxygen mandate and adopts the other principals I have discussed, cleaner fuels can be produced in California helping to clean the air and also providing a model we can look to for future improvements in the Federal RFG program.

Mr. BILIRAKIS. Thank you, Mr. Early.

I recognize Mr. Young for your testimony, sir.

STATEMENT OF DALE O. YOUNG

Mr. YOUNG. I would first like to say, if anyone has a problem with my last name, my first name is Dale.

I work for Lyondell Chemical Company as the business director for Oxygenated Fuels. Lyondell Chemical Company is based in Houston, Texas. We represent the largest manufacturer of MTBE. We have assets totaling \$17 billion. We operate in nine States and 14 countries. We have a total employee population of approximately 11,000 individuals.

We at Lyondell are proud of our contribution that we have been able to make toward improving air quality in the United States, and that associates directly with our manufacture of MTBE.

We are also proud of the fact that MTBE extends the gasoline pool itself. And, of course, the issue of improving air quality and reducing the U.S. dependence on imported oil are two key principles associated with the development of the RFG program.

I am going to limit my discussion today two key points. Those areas involve environmental benefits associated with oxygenates and directly with MTBE, as well as talking about the gasoline pool, which we have heard a lot about today and the impact of any ban or caps on MTBE related to the oxygenate pool.

With regard to MTBE and oxygenates, let me point out three, to me, key areas where oxygenates provide substantial benefits from the air quality standpoint. The first we have heard a lot about today is that it displaces aromatics in the gasoline pool. And, of course, aromatics, again as we have heard, when you burn aromatics, result in higher toxic formations, as well as particulate matter, in comparison to oxygenates in general.

MTBE and oxygenates also improve the vaporization of gasoline. The reason that is important is, when you start your car, your catalytic converter is not heated up so it is not destroying any of the VOCs or toxics that are admitted from the combustion process. In approximately a 3- to 5-minute period of time, any production is actually just coming right out of the tailpipe because that catalytic converter is not started up.

Because of increasing the vaporization, you are able to increase the combustion of the gasoline and, therefore, minimize the amount of toxics, as well as VOCs, that are generated during that cold startup time.

One area that has been talked a lot about is that we ensure that there is no backsliding from an air quality standpoint. We have talked a lot about automobiles and burning gasoline in automobiles; but one area, as an example, that oxygenates provide a particularly valuable role is in items such as off-road vehicles. An example of an off-road vehicle would be a lawn mower where you have no catalytic converter.

To give you an example of the impact of those off-road vehicles, on a national basis, approximately 25 percent of the pollutants resulting from combustion in sources comes from those particular sources. So it is key to address that issue as it comes to backsliding. Clearly, MTBE and oxygenates reduce VOC, reduce CO, reduce toxic production in those particular vehicles.

Regarding the gasoline pool in general, we have heard a lot today about MTBE blending in the United States alone. Approximately 300,000 barrels a day of MTBE is blended into gasoline. That represents just shy of 4 percent of the gasoline pool. But, again, the other thing we have heard is that the octane component of MTBE is very high. And, as a result, you can view that MTBE represents probably closer to 5 percent of the octane pool.

In the end, if you ban MTBE, if you phase it out in a precipitous way, it is going to have a direct impact on the price of gasoline. And at today's \$32 barrel crude, I do not think anybody looks forward to higher gasoline prices.

The last thing I would like to talk about just very briefly relates to the water contamination associated with MTBE. We have obviously clearly heard today that the primary source for what I will call actionable levels associated with MTBE relates to leaking underground storage tanks. It is a point-source location.

We think the best approach toward resolving this issue is to ensure that there are no underground leaking storage tanks. You first ensure that they do not. But when they do, you monitor them so that if a leak occurs, you catch it quickly and you are allowed to clean it up.

So, again, we support certainly no air quality backsliding. We think you have to take a hard look associated with the impacts on the price of gasoline associated with MTBE. And certainly you need to improve and fix underground leaks in storage tanks.

Thank you.

[The prepared statement of Dale O. Young follows:]

PREPARED STATEMENT OF DALE O. YOUNG, DIRECTOR, OXYGENATED FUELS
BUSINESS, LYONDELL CHEMICAL CORPORATION

Mr. Chairman and members of the Subcommittee, I appreciate very much the opportunity to appear before you today on the important topic of the national implementation of the reformulated gasoline program. My name is Dale Young, and I am director of the MTBE business unit at Lyondell Chemical Company. Lyondell is based in Houston, Texas, and is an MTBE producer. In total, the Lyondell enterprise consists of businesses with more than \$17 billion in assets, operations in 9 states and 15 countries, with approximately 11,000 employees worldwide. Products made from Lyondell materials fill the supermarket shelves and go into automobiles, housing, clothing and other necessities that improve the quality of people's lives by making these products safer, healthier and more convenient.

I am proud to say that Lyondell has an enviable record for occupational safety and community relations throughout the United States and abroad. Facilities owned or operated by Lyondell subscribe to the Responsible Care principles of the Chem-

ical Manufacturers Association and have received awards for environmental excellence and leadership by state regulators in Texas and Louisiana.

I am testifying this morning on behalf of Lyondell and the Oxygenated Fuels Association (OFA), of which Lyondell is a member. OFA is an international trade association of manufacturers of fuel oxygenates.

The Environmental Benefits of MTBE

To begin with, it is important to review the accomplishments of the RFG program, and the role that MTBE has played in those accomplishments. As you know, RFG is required to be sold in the ten large urban areas of the United States with the worst ozone (smog) problems. In addition, all or parts of 17 states with ozone problems have "opted in" to the RFG program. As a result, about one third of the gasoline consumed in the United States is RFG.

The Clean Air Act requires that all RFG must contain 2 percent, by weight, of oxygenates. There are effectively only two oxygenates being used in the RFG gasoline pool today: MTBE and ethanol. MTBE is a product that is made by combining methanol and isobutylene. It is manufactured both by refineries and by chemical companies. For a variety of environmental, commercial, and performance-related reasons, MTBE has become the oxygenate-of-choice for making RFG. MTBE is used in 80-85 percent of RFG produced today, while ethanol is used in the remaining 15-20 percent of RFG produced.

As you know, the Congressionally-mandated RFG program consists of two phases: Phase I covers the period from 1995 through 1999. Phase II started at the beginning of this year. The following chart summarizes the minimum air quality improvements mandated for each phase of the RFG program:

	VOCs	NOx	Toxics	Benzene	Oxygen
RFG Phase I (1995-99)	15%	no increase	17%	1%	2.0 wt%
RFG Phase II (2000)	27%	6.8%	22%	1%	2.0 wt%

EPA has compiled data showing that Phase I RFG has *surpassed* the requirements of the Clean Air Act. An analysis of the Phase I RFG produced by refiners shows that the fuel reduces ozone-forming compounds, such as VOCs, by over 28 percent—that's 44 percent above the 15 percent requirement of the law. Emissions of air toxics pollutants are reduced by approximately 30 percent—that's almost twice as much as required by law. Even emissions of oxides of nitrogen (NOx) are reduced by 2-3 percent with Phase I RFG, even though the law does not require any specific reduction in NOx emissions in Phase I RFG.

Ambient air monitoring confirms that the RFG program is working. Testing shows that benzene levels have declined by 31 percent between 1994 and 1997; levels of ethyl benzene, another toxic component of gasoline, have declined 52 percent during the same period. RFG areas also showed significant decreases in other vehicle-related VOC concentrations. EPA has testified that the emissions reductions mandated for Phase I RFG—which have been met and exceeded—and the emissions reductions of Phase II RFG—which are already nearly met—are equivalent to taking more than 16 million vehicles off the road.

As a key component of RFG, MTBE contributes to the environmental benefits of RFG in several ways. First, by adding MTBE to gasoline, refiners dilute or displace gasoline components such as aromatics (benzene, toluene and xylene) which contribute to the formation of ozone. These compounds are hazardous air pollutants, themselves. EPA has acknowledged that if oxygenates were not used to produce RFG, levels of aromatics or olefins may have to be increased to provide the necessary octane. Second, by adding MTBE to RFG, refiners improve the combustion of the gasoline, resulting in fewer emissions of smog-forming pollutants, such as VOCs, NOx, particulate matter, and carbon monoxide. Third, by adding MTBE, refiners reduce the overall vapor pressure of gasoline—the rate at which it evaporates—thus reducing evaporative emissions of VOCs.

These environmental benefits are not likely to be duplicated by formulations of clean fuels without MTBE. Consider that changes suggested by refiners will only likely be successful when used in conjunction with a catalytic converter. However, virtually no off-road engines have such converters, meaning that the loss of oxygenates would result in fuels doing nothing for between 25 and 30 percent of the emissions inventory. No matter how you slice it, an ill-considered move to take oxygenates out of fuel will result in environmental backsliding from current levels of achievement.

Impact on Water Quality

While MTBE quietly labored as the workhorse of the Clean Air Act, few in the public took notice until MTBE was detected in certain drinking water supplies, principally in California. Lyondell shares the concerns of most Americans for clean water, having made substantial investments itself in waste minimization and pollution prevention that protects our water resources. In fact, the Oxygenated Fuels Association joined with the Western States Petroleum Association (WSPA), and the Association of California Water Agencies (ACWA) in October 1997 to form the California MTBE Research Partnership. The purpose of the partnership is to develop a statewide research program concerned with MTBE treatment technology and source-protection issues. The mission of the partnership is to identify, plan, and sponsor practical research projects to protect, treat or remove MTBE contamination from drinking water supplies. The partnership has begun to identify the best means and technologies for removing MTBE from drinking water supplies, and from preventing such contamination in the first place.

The source of the MTBE contamination of drinking water supplies in California, and in most other cases of MTBE found in drinking water supplies, is leaking underground gasoline storage tanks. For example, the South Lake Tahoe area is served by seven local gas stations. According to testimony given during the California public hearings, all of these stations were leaking gasoline into the ground water; not surprisingly, this gasoline eventually found its way into the water supply for South Lake Tahoe, California. Violations of existing regulations included evidence of disabled dispenser sensors, poor installation, disabled leak detection, and inadequate documentation of annual inspections.

As the Subcommittee is aware, in March 1999, California Governor Gray Davis issued an executive order calling for an end to the use of MTBE in reformulated gasoline. It is important to note that Governor Davis's executive order identifies leaking underground storage tanks as the source of the problem:

[W]hile MTBE has provided California with clean air benefits, *because of leaking underground fuel storage tanks* MTBE poses an environmental threat to groundwater and drinking water...[emphasis added]

In fact, there are more than 750,000 active underground fuel storage tanks, and another 1.3 million tanks which have been closed. In California alone, there are nearly 50,000 active underground petroleum storage tanks. In 1984, Congress recognized the threat posed by leaking underground storage tanks and amended the Resource Conservation and Recovery Act (RCRA) to require owners of these tanks to comply with new design and monitoring standards, or close the tanks permanently. EPA gave the owners of such tanks ten years, until December 1998, to meet the requirements of the new law. The most recent data, from September 1999, shows that approximately 91 percent of the active underground storage tanks in California have approved leak detection systems, and 87 percent of active underground storage tanks have met the California upgrade requirements. This is a marked improvement from December 1998, when the compliance rate was just 60 percent, according to the Petroleum Equipment Institute. Thus, California, like other states, is moving toward full and complete compliance with the new underground storage tank requirements.

Of course, what these statistics do not tell us is whether the leak detection systems on new and upgraded tanks are being maintained. Unfortunately, although leak detection requirements were to be in place by 1993, we understand that the compliance rate is only at about 50 percent. The California Bureau of State Audits said in 1998 that more than 25 percent of the surveyed leaking underground storage tanks sites that contaminated groundwater resulted from tanks that were not permitted and otherwise not monitored for leaks. The bottom line: We must have proper leak detection of new and upgraded underground storage tanks.

In testimony before the Senate Appropriations Committee last year, Senator Diane Feinstein noted that MTBE is "the oxygenate of choice...in areas that need clean-burning gasoline to meet or maintain clean air standards. The major way MTBE gets into groundwater is from defective underground tanks storing petroleum products." As a result, Senator Feinstein introduced S.267, a bill to direct the EPA Administrator to give highest priority to petroleum contaminants in drinking water in issuing corrective action orders under the tank program. We believe that this, or similar initiatives, reflects a common-sense and direct approach to solving the problem. And better yet—an approach which neither endangers air quality or energy price and supply.

There is evidence to indicate that detections of MTBE in drinking water supplies have decreased as underground petroleum storage tanks have been upgraded to comply with the new requirements. The State of California has had a program for monitoring MTBE in drinking water supplies since the mid-1990s. According to in-

formation made available by the California Department of Health Services, 56 percent of sources of drinking water in California have been tested for MTBE. MTBE has been detected in less than one percent (0.8 percent) of the sources tested. (54 detects in 6,684 sources). In May 1997, only 16 percent of drinking water sources were tested, and MTBE was detected in 1.3 percent of those tests (24 detects of 1868 sources). This represents an approximately 54 percent decline in the rate of MTBE detections from May 1997 through February 2000.

It is important to have some context in evaluating the frequencies, and levels, of MTBE detections in drinking water supplies. There is currently no enforceable Federal standard for MTBE in drinking water, although EPA has recently required public water systems to monitor for MTBE in their drinking water supplies and report that information to EPA. (This information is expected to be available in the next several months, and EPA could use that information to decide whether a Federal standard for MTBE in drinking water is warranted.)

In December 1997, EPA issued what it called an "advisory" on MTBE levels in drinking water. EPA's Advisory provided as follows:

This Advisory recommends that keeping levels of [MTBE] contamination in the range of 20 to 40 ug/l [micrograms per liter] or below to protect consumer acceptance of the water resource would also provide a large margin of exposure (safety) from toxic effects.

Thus, while the basis of the recommendation was to protect the "acceptance" of the drinking water, the Advisory acknowledged that the recommended level provided "a large margin" of safety from exposure to potential toxic effects.

The State of Maine has done extensive testing for MTBE in drinking water supplies. In a report issued in October 1998, it reported that MTBE had been detected in about 15.8 percent of private wells tested, and in 16 percent of public water supplies tested. In private wells tested, 92.3 percent of the detections were less than 1 part per billion. Only 1.1 percent of detections were greater than 35 parts per billion. In public water supplies, 93.9 percent of detections were below 1 part per billion. None of the detections were greater than 35 ppb.

Recently reported data from Massachusetts shows similar results. Of 662 wells tested, MTBE was detected in 45 (6.8 percent). However, there were only 3 detections above 10 ppb, and no detections above 15 ppb. In short, gasoline is stored and consumed in every state. And while some detections of gasoline components have in the past been made in drinking water supplies, the levels at which such detections are found are well below levels of public health concern. In addition, the presence of a well-implemented and enforced tank program appears to reduce the instances of releases of gasoline product into the environment.

In New Jersey, Robert C. Shinn, Commissioner of the Department of Environmental Quality, responded to a news report concerning MTBE contamination with the following letter to the editor of *The Press of Atlantic City* on February 24, 2000:

After reading your recent article on the gas additive MTBE, I want to bring a few facts to the discussion.

A 1997 survey, conducted by the New Jersey Department of Environmental Protection, found traces of MTBE contamination in the untreated water at 46 non-community water systems, such as diners or office complexes supplied by a well, and 29 community water systems. Only one noncommunity water system and one community system, in Fairlawn, exceeded New Jersey's 70 parts per billion health standard for MTBE. Most of the wells on the list had MTBE levels of no more than 2 parts per billion.

The "60 Minutes" show left the erroneous impression that MTBE cannot be removed from water. In the example of the Fairlawn Water Department, untreated water sampled ranged from 37 to 73 parts per billion of MTBE, but treated water had only 1 part per billion.

MTBE contamination is just one facet of the historic problem of leaking underground storage tanks, and that problem is being solved. Since December 1998, 10,308 substandard or leaking underground storage tanks have been removed. More than 3,000 underground storage tank sites are under active remediation.

MTBE contamination of groundwater is a problem but certainly not a crisis in New Jersey.

Experience in New Hampshire has been similar. Governor Jeanne Shaheen of New Hampshire wrote EPA Administrator Carol Browner on September 14, 1999 and referred to her state's Source Water Protection program as "a national leader in protecting sources of public and private drinking water." The Governor concluded: "As a result, MTBE levels detected in surface water supplies are extremely low, ranging from 1 to 5 ppb." By way of comparison, the NHDES has established an

extremely conservative action level for MTBE at 15 ppb, still well above the levels of MTBE being detected.

Health Effects of MTBE

The detections of MTBE in drinking water supplies have prompted questions concerning the health effects of MTBE in drinking water supplies. Those with a desire to see MTBE removed from the marketplace have gone further to suggest that little is known about the health effects of MTBE. In fact, nothing could be further from the truth.

MTBE's first contribution to the health of Americans was as a replacement for lead in gasoline in the late 1970s. MTBE was added to maintain octane in the fuel. Under the Clean Air Act, the refiners' ability to use MTBE in fuel was subject to EPA approval. The refiners made the appropriate demonstrations, including providing information on the known health effects of MTBE, and EPA approved the use of MTBE at concentrations of up to seven percent, by volume. In 1981, EPA approved a blending of MTBE in unleaded gasoline to a maximum of 11 percent. In the early 1980s, refiners created an industry study group, managed by the American Petroleum Institute. The industry group sponsored a toxicology testing program and submitted the results to EPA.

In 1986, a Federal Interagency Testing Committee, acting under authority of the Toxic Substances Control Act, recommended additional testing of MTBE based on expected increased production levels, potential exposure as gasoline component, and need to complete data sets. The industry agreed to conduct such testing and established a program under EPA oversight and guidelines. From 1988 until 1992, the industry testing group sponsored and/or conducted all of the tests required by EPA. Progress reports on these tests were submitted to EPA for inclusion in the public docket. In 1988, EPA approved the blending of MTBE in unleaded gasoline to a maximum of 15 percent by volume.

In addition to the industry-sponsored tests, toxicologists at EPA's laboratory in Cincinnati, Ohio, conducted the first examination of the risks of exposure to MTBE by ingestion. The peer-reviewed study, reported in the *Journal of the American College of Toxicology*, did not identify any adverse long-term effects associated with exposure to MTBE.

Nonetheless, MTBE is repeatedly referred to in the popular media as a "probable" or "possible" carcinogen. These assertions apparently are based on the study conducted in 1995 by Italian researchers in which laboratory rats were exposed to very large doses of MTBE over a two-year period. The author of this study found that these rats contracted leukemia and lymphoma. However, this study has been repudiated on the grounds that it lacked independent peer-review, it used unconventional laboratory procedures, and its results have not been replicated.

In 1999, the International Agency for Research on Cancer (IARC), part of the World Health Organization, conducted a review of the Italian study and the broad range of other research on the chronic (long-term) effects of exposure to MTBE. IARC can classify a substance into one of five categories: Group 1—carcinogenic to humans; Group 2A—probably carcinogenic to humans; Group 2B—possibly carcinogenic to humans; Group 3—unclassifiable as to carcinogenic risk to humans; and Group 4—probably not carcinogenic to humans. The IARC review put MTBE in Group 3, concluding that there is "inadequate evidence in humans for the carcinogenicity" of MTBE. Such a finding places MTBE in the same category as caffeine, tea, and fluorescent lighting.

In fact, a case could be made that MTBE actually reduces the risk of cancer. According to the California Environmental Protection Agency, the cancer risk from emissions of gasoline-powered vehicles throughout the state has been reduced by approximately 40 percent since the reformulated gasoline program began, in large part because MTBE displaces known carcinogens in gasoline. In October 1998, the Northeast States for Coordinated Air Use Management (NESCAUM) completed a study of the relative risks of conventional gasoline compared to Federal RFG with MTBE. The report found that Phase I RFG reduced cancer risk over conventional gasoline by 12 percent. It predicted that Phase II RFG would reduce cancer risk over conventional gasoline by 20 percent.

Energy Implications of Changing the RFG Program

In addition to the environmental benefits described above, MTBE provides another important benefit: it helps to extend the gasoline supply and moderate supply disruptions. The Department of Energy has testified that, "From an energy security perspective, oxygenates provide a way to extend gasoline supplies. The transportation sector is almost totally dependent on oil. One of the few near-term options for reducing oil dependency is to expand our use of oxygenates." EPA's own Blue

Ribbon Panel further noted that, "MTBE is currently an integral component of the U.S. gasoline supply both in terms of volume and octane."

MTBE makes up a significant percentage of the volume of every gallon of RFG. The Clean Air Act requires each gallon of RFG to contain two percent, by weight, of oxygen. To achieve this level, refiners must add enough MTBE by volume equal to approximately ten percent of the volume of each gallon of gasoline. As described above, MTBE is the oxygenate-of-choice in 80-85 percent of RFG. Thus, the total consumption of MTBE in the United States gasoline pool is approximately 286,000 barrels per day. Domestic production supplies approximately 202,000 barrels per day. Approximately 18,000 barrels per day enter the U.S. as part of imported reformulated gasoline. And another 89,000 barrels per day is imported "neat," or not yet mixed with gasoline.

Assuming that the total U.S. gasoline pool is 8.2 million barrels per day, MTBE represents about 3.5 percent of the total volume of gasoline consumed. It is important to note, however, that MTBE is of higher octane than gasoline, and thereby allows refiners to use components of the refining process that are of lesser quality (i.e., lesser octane). Therefore, if you remove MTBE from the gasoline supply, you would lose between five and seven percent of the total volume of gasoline. The Department of Energy has estimated that this is equivalent to removing four or five refineries producing 100,000 barrels a day.

We can hardly envision a less auspicious time to announce a frontal assault on between 11 and 15 percent of gasoline supply in RFG areas, and as much as 5 to 7 percent of the overall supply. Recent months have seen substantial increases in the price of both gasoline and home heating oil. Many have blamed the price of imported oil for this result, and they are partially correct. However, even phasing down the use of MTBE in the near future could have a devastating effect. A cap could send an unfortunate market signal that MTBE is not a favored additive. As a result, obtaining additional capitalization for expansion and maintenance would be difficult, thus endangering the industrial base of production.

Let us not forget that California first felt substantial price increases and short supply of gasoline when two West Coast refineries were down intermittently. If Congress should effectively eliminate the use of MTBE, it would create a market effect similar to the complete loss of 4 to 5 100,000 barrel per day refineries. American consumers—and particularly those nearest the poverty level with the least disposable income—would surely find such a result intolerable.

Alternative Oxygenates

Much has been made of ethanol as a potential substitute for MTBE as a fuel oxygenate. In those areas of the country where reliance on ethanol makes some economic sense, it is already the oxygenate of choice and federal law itself is, of course, neutral as to which oxygenate may be used. However, greatly expanded use of ethanol makes little sense.

First, expanding ethanol use will come at the expense of air quality. Use of ethanol is not as effective at combating air toxics and even increases levels of certain toxics called aldehydes and peroxyacyl nitrates (PAN). Ethanol is less effective at controlling criteria air pollutants as well. NESCAUM has previously commented that, "Greater emissions of volatile organic compounds (VOCs) would occur during the early and late portions of the [Northeast] region's ozone season since gasoline blended with ethanol is more volatile than similar gasoline without ethanol." In addition, the higher volatility ethanol-blended gasoline can contribute to an overloading of an automobiles evaporative canister and subsequently lead to higher CO emissions. EPA has acknowledged that the increased use of ethanol will result in increased NOx emissions.

Oxygenates like MTBE go to work in an engine at the point where most pollution is produced: the cold cycle. For the first three to four minutes after you start your ignition, your car's engine produces the majority of its emissions. Because oxygenates combust at low temperatures with MTBE combusting at far lower temperatures than ethanol—fuel chemistry clearly demonstrates that MTBE is the most effective component of pollution control when the car is still relatively cold. In addition, to meet the other federal specifications, RFG without oxygenates would have to change its ratio of aromatics. The result of this change is two-fold: first, there will be a certain increase in air toxics from automobiles; and second, more byproducts from the use of aromatics may be created. In fact, if ethanol is used to replace MTBE, it is more volatile than MTBE and therefore would increase evaporative emissions.

Second, the ethanol production process itself is not without significant environmental consequences. Modern agriculture is reliant upon pesticides and fertilizers, and has become a substantial source of non-point source water pollution. The most

noted contamination of water bodies such as the Chesapeake Bay and the Everglades have come at the hands of agricultural production. In a study of the environmental impacts of energy crops, the Office of Technology Assessment essentially dismissed the expanded use of annual crops such as corn as a source of energy because of the environment damage associated with its cultivation. Of course, the greenhouse gases released during the ethanol fuel cycle contain relatively more nitrous oxide and other potent greenhouse gases as compared to the clean natural gas at the heart of the MTBE process.

Third, it is not at all clear that greater reliance on ethanol will help resolve any problems with water quality. Gasoline contains a range of aromatics, such as benzene, toluene, and xylene, that are among its most toxic components. In subsurface conditions, it appears that ethanol may interfere with the biodegradability of these aromatics, thus potentiating a significant source of toxic water emissions. And, of course, IARC has classified ethanol as a known carcinogen.

Last, even if expanded ethanol production were a good idea, ethanol cannot be produced in sufficient quantities economically to satisfy America's needs within the RFG program. Indeed, it is unlikely that ethanol can meet its current demands in the Midwest while cost-effectively supplying any new markets on either coast. Ethanol has logistical problems, including its inability to be carried in gasoline blends through pipelines—the most efficient way to transport fuels. Further, ethanol costs the American taxpayer 54 cents for every gallon consumed. As CBS News described ethanol, it is “probably the most economically inefficient, unwarranted form of corporate welfare in our entire federal budget.” (Eye on America segment, 3/26/96)

Conclusion

In summary, it is clear that the Federal RFG program has contributed to significant improvements in air quality in many of the most polluted regions of the United States. It is also clear that MTBE—the oxygenate-of-choice in 85 percent of RFG produced—has contributed in a large way to the air quality improvements attributed to RFG.

It is also clear that there is no credible evidence that MTBE presents a significant risk to human health, either from short-term exposures or over a longer term. What is clear is that MTBE has resulted in reduced cancer risk by reducing hazardous air pollutants.

The pressure to address the groundwater contamination problems created by leaking underground storage tanks puts several questions in stark relief. First, is there a need to replace MTBE? The answer is no. The detection data indicates that as underground storage tank compliance improves, detections of MTBE in drinking water supplies decrease.

Second, is there a viable replacement for MTBE? Again, the answer is no. Alternatives to MTBE, including ethanol, are more expensive and more difficult to transport. Industry experts estimate that even under ideal circumstances, replacing MTBE with ethanol will raise prices at the pump a minimum of seven cents a gallon. But prices could rise much higher than that if shortages of ethanol and, as a result, of gasoline develop. Currently, refiners use about 286,000 barrels a day of MTBE; total ethanol capacity is far less than that.

Can refiners make gasoline without MTBE—or any other oxygenate—that still meets the requirements of the Clean Air Act? Some refiners say they can, but it is incumbent on members of this Subcommittee to examine those assertions carefully. If MTBE constitutes 10-11 percent of the volume of a gallon of gasoline, and you remove that volume, you must replace it or have less gasoline. If you replace MTBE with more refined petroleum product, you have more of the cancer-causing contaminants that cause urban smog. It is hard to see how taking MTBE out of the gasoline supply will not both create more pollution and less gasoline, and therefore higher gasoline prices.

Refinements in regulations for underground storage tanks will go a long way toward solving the problem of gasoline constituents in groundwater. If you restrict or prohibit the use of MTBE, can you be certain that you will not increase the risks of adverse health effects. Some refiners claim that they can make RFG without oxygenates that meets the Federal Phase II requirements, but is there any third-party independent confirmation? EPA has such a question pending before it in the form of request from California, but it seems very reluctant to say yes or no. And possibilities do not always equate to practice. Oxygenates in Phase I RFG allowed for over-achievement. Eliminating oxygenates from Phase II requirements may effectively limit the possibility of similar results.

Finally, what are the other consequences of taking MTBE out of the gasoline supply? As described above, MTBE constitutes a significant percentage of the gasoline pool. If you take away that volume (between 5-7 percent) what are the supply and

price ramifications? And if you do as some have suggested, that is, give States the right to establish their own formulae for RFG, do you threaten the ability of regional and even national refiners to provide the necessary gasoline supplies at the best available price?

We thank you again for the opportunity to testify on this important issue. We stand ready to assist the Subcommittee in its efforts to identify effective and commonsense solutions to the problem of gasoline constituents in drinking water supplies. However, we strongly encourage the Subcommittee not to sacrifice the environmental and energy advantages created by the use of oxygenates—and particularly MTBE—in reformulated gasoline.

Mr. BILIRAKIS. Thank you, Mr. Young.
Mr. Vaughn.

STATEMENT OF ERIC VAUGHN

Mr. VAUGHN. Thank you, Mr. Chairman. I want to thank the subcommittee for the opportunity to be here.

My name is Eric Vaughn. I am the president and chief executive officer of the National Trade Association for the ethanol industry. It is called the Renewable Fuels Association. We have about 275 member companies representing just over 60 ethanol production facilities in 27 states.

Maybe to correct one item earlier, while the bulk of the ethanol today is made from the starch component of corn, we are manufacturing ethanol today from 27 different feed stocks; and we expect that will grow in the years to come.

I want to congratulate the chairman—I know that is not necessarily pandering at this late date and time of the day, but for your efforts of trying to put together a package to bring this to a resolution. But lest the pandering go too far, I would like to suggest a couple of modifications.

First and maybe foremost, this problem, if indeed it is serious enough at this stage to open the Clean Air Act for amendments, and by “this problem” I mean MTBE-associated water contamination, it is a problem that requires a national, not a regional solution or subregional solution. For anyone to suggest that we ought to have an East Coast plan, a Midwest plan, a West Coast plan, the reality is that is what sparked much of the ethanol industry’s anger, concern, frustration; and it extends even to today, that if you simply eliminate the requirement or the use of MTBE, let’s say in California, for example, what will happen to 1.5 billion gallons of MTBE gallons in California? Will Saudi Arabia or Bahrain or somebody else just take it back, or will it continue to find markets elsewhere? It is a reasonable concern. It is a reasonable issue. So a national solution, if in fact this needs a solution, is something that is incredibly important.

Second, if MTBE is such a serious contaminant, and I honestly do not have any scientific studies, if you had them, you would probably share them with us, that would document or demonstrate to you serious long-term health effects with MTBE. We do not have those studies. This is a resource degradation issue.

I could smell the little vials of MTBEs that various members were opening in the back of the room. It is a vile smell. It is an unpleasant odor. And if it is contaminating water to the point where people will not use it, they will not drink it, it is causing serious disruption, not just casual disruption that makes your hair

smell bad for half a day. No. It is shutting down expensive water supply systems and it is needless.

But the process of how we move from where we are to where we are going to need to be is going to have to address a number of critical issues, not the least of which is backsliding.

I am not going to go anywhere near as deep into this as Mr. Graboski did, but I will add this: a previous statement was just made that the blueprint may very well be, once again, California. I ask the committee, Mr. Chairman, I implore you, look at this blueprint before you adopt it.

One of the critical components of the 1999 Clean Air program, CARB-3, is a 10 percent increase in aromatics. This is not necessary. The ability to provide flexibility is critical to the refining industry. The objective of producing clean air should not be parsed against increases in aromatic content in gasoline. Flexibility is not needed to be met that way.

Last, we have worked long and hard and very closely with our refining industry friends, and we have many of them. I think we are starting in a very effective path we are trying to find a reasonable, cost-effective solution to this problem. I would point to this: the refining industry has invested hundreds of millions, billions of dollars, to get us to the point that we are today: cleaner burning, reformulating gasoline fuels in many markets around the country. They have a serious problem.

Ultimately, this problem will affect their customers and our customers, as well. We want to work with them to solve that problem. They need time and flexibility, absolutely critically important, especially when you juxtapose that the other requirements put on them from sulfur reduction and a range of other initiatives coming down, they need that time and that flexibility.

We honestly believe both can be met, and we honestly feel, very strongly obviously, that our fuel oxygenate, our clean source of octane can be helpful in achieving those objectives.

I would remind the committee that, when this amendment was adopted in the Clean Air Act of 1990, it was called the Clean Octane Amendment and it was intended to try to find ways to reduce and replace toxic aromatic components with cleaner alternative sources of octane. And if we are going to have the courage to look at this Clean Air Act in 2000 and make some adjustments, let's take the time to make serious adjustments, aggressive and effective air quality adjustments.

I was looking at sulfur, looking at the aromatic content fraction. I think Mr. Graboski's point on weighted toxicity is absolutely on the mark. And of course we should be looking at the oxygen content issue. But that is a full, comprehensive assessment of where we are in the year 2000, not a piecemeal approach. And that is an approach worthy of this committee; and our industry stands firmly committed to working with you, Mr. Chairman, to try to come up with a solution. We want to be part of the solution to this problem and work with you aggressively on it.

Thank you for the time.

[The prepared statement of Eric Vaughn follows:]

PREPARED STATEMENT OF ERIC VAUGHN, PRESIDENT, RENEWABLE FUELS
ASSOCIATION

Good morning Mr. Chairman and Members of the Committee. I am very pleased to be here to discuss the national environmental and public health affects of the reformulated gasoline (RFG) program generally, and the RFG oxygen content requirement specifically. These are important issues with far-reaching consequences for both consumers and air quality, and I appreciate the opportunity to provide comments on behalf of the domestic ethanol industry.

The Renewable Fuels Association (RFA) is the national trade association for the domestic ethanol industry. Our membership includes a broad cross-section of ethanol producers, marketers, agricultural organizations and state agencies interested in the increased development and use of fuel ethanol. There are more than 50 ethanol producing facilities in 21 states in operation today, including a growing number of farmer-owned cooperatives that have begun production in just the past five years. The industry currently produces approximately 100,000 barrels of ethanol per day (1.5 billion gallons annually), and utilizes more than 600 million bushels of grain per year. The RFA membership represents more than 95% of all ethanol produced and sold in the United States today.

Background:

Before turning to the RFG program, I would like to provide some perspective as to why ethanol is so critically important to the nation's economic, energy and environmental policies. One need only look at today's headlines to appreciate the need for increased production and use of fuel ethanol. With overall conditions in the farm economy in 2000 expected to be similar to last year and the nation facing record oil prices due to OPEC production cutbacks, ethanol production and use will play a pivotal role in providing value-added processing for grain while helping to constrain gasoline prices and promote competition.

At a recent USDA Agricultural Outlook Forum, USDA Chief Economist Keith Collins stated that the price for corn this year is "expected to average only \$1.90 a bushel, slightly below the 1998 crop." With total supplies predicted to be near 1999 levels and little change in ending stocks, Collins noted that "corn prices are expected to show only modest improvement next season." Collins also predicted that in light of weak markets, substantial government payments will be made under current programs in 2000. The use of corn for ethanol production not only adds to the price of a bushel of corn, it also helps to reduce government payments.

At the same time, the Energy Department reports oil prices are at the highest levels since the Gulf War, and gasoline prices are expected to top \$1.60/gallon this summer. Blending ethanol with gasoline provides an economically competitive source of octane, helping to constrain gasoline prices. As the Congress considers policies to moderate gasoline prices and assure fuel supplies, providing increased market opportunities for domestically-produced renewable energy, such as ethanol, should be a top priority. In fact, the farm income and energy security benefits of ethanol were principle factors leading to congressional approval of the RFG program and the oxygen content requirement in the Clean Air Act Amendments of 1990. Today's headlines merely reinforce the efficacy of that decision.

The Reformulated Gasoline Program:

First, I think it is important to underscore that the RFG program, with its oxygen content requirement, has worked quite effectively. Air quality has improved. Indeed, about 75 million people are breathing cleaner air because of RFG. EPA reports that RFG is reducing ozone-forming hydrocarbon emissions by 41,000 tons and toxic pollutants such as benzene by 24,000 tons annually. That's the equivalent of taking 16 million vehicles off the road each year. A study by the Northeast States for Coordinated Air Use Management (NESCAUM) shows that today's RFG reduces the cancer risk from gasoline by about 20 percent. It is critically important to recognize that these benefits are significantly greater than required by the Clean Air Act's performance standards for hydrocarbons and toxics, at least in part because of the federal oxygen requirement.

At the same time, the decision by refiners to use MTBE in most RFG has had a devastating impact on water quality. The U.S. Geological Survey reports that MTBE has been detected in 27 percent of urban wells nationwide. In RFG areas, where MTBE is more commonly used, the problem is more severe. MTBE is four to six times more likely to be detected in RFG areas than in conventional gasoline areas. USGS reports that 79% of the wells tested in Denver and 37% of the wells tested in New England had detectable levels of MTBE. Indeed, MTBE is now the second most commonly found chemical in groundwater, behind only chloroform.

Leaking underground storage tanks and spills at the land surface are important point sources for MTBE in the environment. But there are many other sources of MTBE water contamination. Potential non-point sources of MTBE include precipitation, urban runoff, and motor water craft. Once MTBE is in water it is expected to move between surface and ground water with the natural movement of water. Indeed, MTBE is very water soluble compared to the BTEX compounds and other components in gasoline; the solubility of MTBE is about 50,000 mg/L (milligrams per liter) whereas the next most soluble component of gasoline is benzene, which has a solubility of 1,780 mg/L. Therein lies the problem; if MTBE is in gasoline it will find its way to water where it is extremely soluble and will eventually contaminate drinking water supplies.

As a consequence of the growing concerns regarding MTBE water contamination, there is interest in amending the Clean Air Act and the RFG program to allow refiners to reduce or eliminate their MTBE use. Refiners claim they cannot eliminate their use of MTBE without the “flexibility” of producing non-oxygenated fuel and have sought the elimination of the oxygen requirement. The domestic ethanol industry has steadfastly opposed efforts which seek only to eliminate the federal RFG oxygen requirement or address the issue for particular states or regions. However, *we do not want to hinder legislative efforts to address this serious public health and environmental issue.* We want to be part of the solution, not part of the problem. Toward that end, we have developed the following principles which we believe should guide congressional action on this issue.

- Develop a national solution;
- Address the cause of the problem;
- Protect the environment; and,
- Provide the necessary time and “flexibility” to allow refiners to make a rational transition to increased ethanol utilization.

Develop a national solution. *Regional or state-specific actions will create a patchwork of fuel regulations resulting in increased consumer costs and will encourage MTBE use in areas not using MTBE today—expanding potential MTBE water contamination.*

Approximately 4 billion gallons of MTBE are consumed in the United States today, with the vast majority of it used in RFG markets. Approximately one-third of the MTBE used is imported, either as a fuel blendstock or in finished gasoline. In the absence of a national MTBE control program, states will continue to take action phasing out MTBE. Already, California, Iowa and South Dakota have enacted MTBE controls. Missouri, Colorado, Wisconsin and several northeast states have MTBE ban bills pending. In the Congress, H.R. 11 and various other legislative proposals attempt to address this issue regionally. But unless a national control is imposed, MTBE will flow unfettered into areas where MTBE is currently not being used. Saudi Arabia is not going to take its MTBE back. MTBE producers will find other markets. The first place MTBE will flow is Midwest oxygenate markets where MTBE is currently not used. It is logical to assume that MTBE will also flow into conventional gasoline octane markets. In addition to displacing ethanol from these critical markets, this will merely expand potential MTBE water contamination and jeopardize precious water supplies. Only a national control of MTBE will protect everyone's water supplies and not disrupt existing oxygen and octane markets for ethanol.

Address the cause of the problem—MTBE. *The use of MTBE in the nation's motor fuel should be reduced or eliminated as expeditiously as possible.*

The domestic ethanol industry should not be advising the Congress on how to control the use of its competition in the marketplace. However, we can state with conviction that if the problems associated with the use of MTBE are so serious as to warrant legislative action, Congress ought to be sure to fix them. *The problem is not oxygen in gasoline, it is MTBE in water.* Congress should determine what controls on MTBE are necessary to protect water supplies and take them. But simply eliminating the RFG oxygen requirement will NOT assure that MTBE use is reduced and WILL undermine the “real world” environmental benefits of the current RFG program with oxygen.

EPA's Blue Ribbon Panel concluded that MTBE use should be “reduced or eliminated.” EPA staff recently went further, stating that MTBE should be removed from gasoline as quickly as possible. The Department of Energy has stated a 3% volume cap on MTBE is appropriate. Because MTBE is bio-accumulative and persistent in the environment, many believe the only sure means of protecting drinking water supplies is to prevent MTBE from getting into gasoline in the first place. In any

case, Congress needs to take whatever action it deems appropriate to protect public health and water resources.

We would only suggest that as Congress debates this issue, and if an MTBE phase-out or other control is imposed, that consumers be made aware whether MTBE is being used in the gasoline they purchase. Pump labeling of MTBE is something that can be done quickly and effectively. We would strongly encourage EPA to act expeditiously so that consumers are aware when MTBE is being used. Consumers have a right to know.

Protect the Environment. *The air quality gains provided by RFG with oxygenates should not be sacrificed as MTBE use is reduced, i.e., the toxic and carbon monoxide emissions benefits of oxygen should be preserved.*

The RFG program assures air quality benefits through the combined application of emissions performance standards and an oxygen requirement. As a result, the RFG program has provided toxic reductions in excess of those required by the performance standards alone. The oxygen standard has also provided reductions in carbon monoxide for which there is no performance standard at all. *Congress should not reward the disastrous decision of the oil industry to utilize MTBE as the oxygenate of choice in RFG by allowing them to increase pollution.*

Industry analysts have concluded that given the opportunity to produce non-oxygenated RFG, refiners will dramatically increase their use of aromatics and other petroleum-derived octane such as alkylate. The environmental consequences of alkylates is not known. The environmental impacts of aromatics certainly is known, and it is troubling. Increased aromatics will lead to higher toxic emissions and increased ozone pollution.

It is ironic that the RFG program was initiated largely in response to environmental concerns about the rising levels of aromatics in gasoline. Increased aromatics, including benzene, toluene and xylene (BTEX), resulted from the congressionally-mandated lead phase-down of the late 70's. To replace the lost octane associated with lead, refiners dramatically increased aromatic levels. By the mid-80's, some premium gasolines had BTEX levels as high as 50 percent. Seeing this, Congress created the RFG program in the Clean Air Act Amendments of 1990, including a specific cap on aromatic levels. That cap was forfeited by EPA in the regulations implementing the RFG program in favor of a complex model, with the understanding that the use of oxygenates in RFG would supply the octane and volume provided by aromatics. Congress should assure that as MTBE use is reduced, the cap on aromatics originally included as an RFG specification is re-established.

In addition, EPA should conduct a rigorous analysis of the "real world" emissions benefits of oxygen, including the impact on higher emitting vehicles, off-road and off-cycle driving (areas where the impact of oxygen is more critical) to assure there is no backsliding from these effects. EPA should also compare the potency-weighted toxic affects of oxygenated and non-oxygenated RFG.

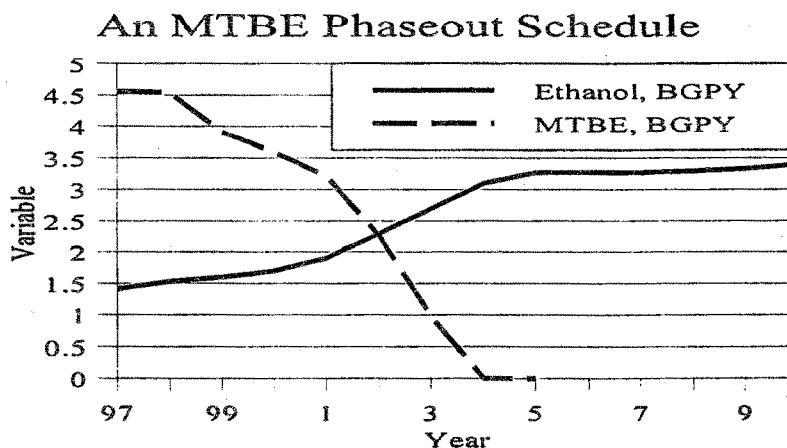
Finally, it is critical that the carbon monoxide (CO) benefits of oxygenates not be ignored. The oxyfuel program worked and CO has been dramatically reduced nationwide. Several CO non-attainment areas have been reclassified into attainment based in part on maintenance plans which include the oxygen content benefits of RFG. If the RFG oxygen requirement is repealed, the CO attainment status of these areas will be jeopardized. In addition, the National Academy of Sciences concluded last year that as much as 20% of the ozone coming from automobiles was attributable to carbon monoxide. EPA should assess this beneficial impact and either 1) incorporate a CO performance standard into the program or 2) promulgate a CO offset so that refiners can balance CO reductions with VOC increases.

Provide Flexibility to Refiners. *The expeditious removal of MTBE should not result in dramatically increased gasoline prices or supply shortages. Refiners and gasoline marketers should be given some flexibility in meeting this challenge.*

Refiners claim the only way to eliminate MTBE without increasing consumer gasoline costs is to eliminate the oxygen standard itself. Indeed, some see the two as synonymous. At a time when gasoline prices across the country are soaring, Congress must consider the economic implications of reducing MTBE use. MTBE currently represents about 3% of the nation's transportation fuel supply. If it is precipitously eliminated without providing for a replacement of that supply, gasoline prices will clearly rise. Indeed, this fact has been established by both the Department of Energy and the California Energy Commission, which concluded a non-oxygenated fuel scenario in California (with no ethanol used) was the most expensive option available to the state in addressing MTBE. It is therefore critical that if MTBE volume is to be reduced, it is replaced with safe alternatives such as ethanol. Following

the oil companies' "flexibility" agenda of no oxygen requirement and an all-hydrocarbon fuel supply will increase consumer gasoline costs.

But we believe there are ways to provide increased flexibility in meeting the oxygenate standard such that replacing MTBE with ethanol will not result in price spikes or supply shortages. Certainly, a gradual phase-out is the best way to protect against potential consumer impacts. The U.S. Department of Agriculture has completed a comprehensive analysis demonstrating that ethanol can effectively replace MTBE by 2004 without price spikes or supply shortages. The Department's analysis shows that total ethanol production capacity will have to increase roughly 50%, to approximately 3 billion gallons by 2004, in order to supply the oxygenate demands of RFG while maintaining the existing ethanol octane markets in conventional gasoline.



Source: U.S. Department of Agriculture

USDA also analyzed the transportation affects of increased ethanol RFG. The Department concluded that ethanol would be shipped by barge or rail cost-competitively, and that "there appear to be no transportation impediment to the use of ethanol as a replacement for MTBE."

The Ethanol Solution

The primary concern with maintaining the oxygen standard appears to be the industry's ability to supply the increased demand for ethanol. But such concerns are unfounded. It is important to understand that because ethanol has twice the oxygen content of MTBE, it will only take half as much ethanol to satisfy the oxygen requirements of RFG. Current MTBE use in RFG is approximately 257 bb/d (thousand barrels per day). That level of oxygen can be met by only 128 bb/d of ethanol. Current ethanol production is 100 bb/d. But added to that is about 300 million gallons of idle ethanol production capacity, 85 million gallons under construction and expected to be on stream shortly, and more than 440 million gallons of production capacity which has been proposed and is seeking financing. Thus, the industry's actual production capacity will soon exceed 2.3 billion gallons annually, or 150 bb/d. In addition, industry sources indicate that such expansions could easily add another 39 bb/d (600 million gallons) of ethanol production capacity within 12 to 18 months.

Ethanol Supply/Demand in RFG

	Ethanol Demand	Ethanol Supply
RFG Ethanol Demand	128 bb/d	
Current Ethanol Use in RFG and Oxyfuels	45 bb/d	
Current Ethanol Production		100 bb/d
Existing Idle Capacity		17 bb/d
Ethanol Production Capacity Under Construction		7 bb/d
Planned Ethanol Capacity		28 bb/d

Ethanol Supply/Demand in RFG—Continued

	Ethanol Demand	Ethanol Supply
Proposed Expansions to Existing Plants		39 bb/d
Total	173 bb/d	191 bb/d

It is important to understand that ethanol production facilities are largely modular. Expansions can be done very quickly by simply adding new equipment to existing production streams. New production from green fields is also now done quite efficiently. Since 1990, most new ethanol production has been by farmer-owned cooperatives. These highly efficient dry mill plants typically go from drawing board to production within two years, at an approximate cost of \$1.00-\$1.50 per gallon of capacity.

The next generation of ethanol production facilities will also include production from cellulose and biomass feedstocks. In just the past two weeks, a new ethanol production plant in Jennings, Louisiana was awarded a \$120 billion bond and is expected to begin construction this spring. When completed, this plant will produce ethanol from rice hulls and bagasse. Three other plants are currently planned in California that will produce ethanol from rice straw. Another facility is planned in upstate New York producing ethanol from municipal waste. Already, ethanol is being produced from wood and paper waste by Georgia Pacific in Washington state, and production from forest residue is not far behind. None of this will happen, however, without the assurance of increased market opportunities for ethanol in RFG. If the oxygenate requirement itself is repealed, there will be little increased ethanol production in the coming years. On the other hand, maintaining the oxygen requirement as MTBE use is phased out will stimulate tremendous new economic development across the country.

Plants Under Construction

Company	Location	Feedstock	MMPY
Adkins Energy*	Lena, IL	Corn	30
Golden Triangle*	St. Joseph, MO	Corn	25
Nebraska Nutrients	Sutherland, NE	Corn	15
NE Missouri Grain Processors*	Macon, MO	Corn	15
Subtotal Under Construction Capacity (by 2000)			85

Proposed Plants

Company	Location	Feedstock	MMPY
American Agri-Technology Corporation	Great Falls, MT	Wheat/Barley	30
Lower Caskaskia Economic Devp. Board	Lower Caskaskia, IL	Corn	100
BC International	Jennings, LA	Bagasse/rice hulls	20
Quincy Library Group	NE Region, CA	Forest Residues	15
BC International (Sacramento Valley)	Gridley, CA	Rice Straw	30
Arkenol*	Mission Viejo, CA	Rice Straw	8
MASADA	Middletown, NY	Municipal Solid Waste	6.6
New Jersey Project	Burlington, NJ	corn	15
Sustainable Energy Devp.	Central Region, OR	Wood Waste	30
Pacific Rim Ethanol Corp.	Moses Lake, WA	Grain	40
Pacific Rim Ethanol Corp.	Longview, WA	Grain	40
Schmidt Brewery	St. Paul, MN	Beer waste	5
GreenLeaf	Platte, SD	Corn	15
Pratte Project	Pratte, KS	Corn/milo	15
Iowa #1	Central Iowa, IA	Corn	15
Iowa #2	Central Iowa, IA	Corn	15
SIRS	Central Missouri, MO	Corn	30
N/a	Black Hills, SD	Forest Residues	12
Subtotal Proposed Capacity (by 2001)			442
Current Production Capacity			1,800
TOTAL CURRENT AND PROJECTED ETHANOL PRODUCTION CAPACITY			2,327

MMPY = million gallons per year

*Cooperatives

Source: Bryan & Bryan Inc.

Ethanol RFG will provide a tremendous economic stimulus to rural America by creating value-added demand for 500 million bushels of grain. According to USDA, replacing MTBE with ethanol in RFG nationwide would:

- increase net farm income \$1 billion annually;
- create 13,000 new jobs;
- enhance our balance of trade \$12 billion by 2010; and,
- reduce farm program costs more than \$1 billion for each \$0.10 increase in corn price.

Thus, replacing MTBE with domestically-produced renewable ethanol will provide a tremendous economic stimulus to rural America while protecting air quality, preserving water resources and maintaining stable consumer gasoline prices and supply.

Conclusion:

The members of the Renewable Fuels Association understand that the Congress is faced with a daunting challenge, i.e, how to protect water supplies by reducing the use of MTBE without sacrificing air quality or increasing fuel prices. We see ethanol as a solution. Increasing ethanol use in this program will allow MTBE to be phased out cost-effectively while protecting precious water resources and air quality. Stimulating rural economies by increasing the demand for grain used in ethanol production will help farmers left behind by our booming economy. Encouraging new ethanol production from biomass feedstocks will provide additional environmental benefits and take a positive step toward a sustainable energy future and global climate change. The bottom line is that we need to protect both air quality and water quality. With ethanol, we can.

Thank you.

Mr. BILIRAKIS. Thank you for your testimony.

Mr. Grossman.

STATEMENT OF BARRY GROSSMAN

Mr. GROSSMAN. Mr. Chairman, I want to thank the chairman and the subcommittee for giving me the opportunity to speak on behalf of Oxybusters across the Nation.

First of all, I would like to say, we are not environmentalists, we are not politicians, and we are not beholden to any special interest groups, and we are certainly funded out of our own pockets.

Let me tell you, everybody, what prompted the formation of Oxybusters to begin with. In November 1992, that was the time oxygenated gasoline with MTBE was snuck into the gasoline supply. I say "snuck in" because there was no publicity about it. Well, during that month sometime, I personally started to get a headache that simply would not disappear. I visited a couple of different doctors, and they could find nothing seriously wrong with me.

A few weeks had passed by and my wife, who was in journalism, read some obscure publication, and I emphasize "obscure," where, in the State of Alaska, some 25,000 people were experiencing headaches and other symptoms because of oxygenated gasoline.

So that prompted me to call the editor of the Anchorage Times, and he put me in touch with at least 30 people from both Fairbanks and Anchorage, Alaska, who were experiencing the exact same thing I was.

I talked to housewives, taxi drivers, school teachers, medical doctors, every walk of life; and they were all experiencing the same awful thing. They were getting these severe type of headaches that would not disappear.

Again, we are just citizens trying to deal with a serious health problem. Finally, people started calling into this Oxybuster hotline that we created. And when I told them that there was a possibility

that this new gasoline was making them sick, at first they were relieved because at least now they knew why they were feeling this way, but soon the relief turned to anger when they realized that their own government was poisoning them.

I also note that the vast majority of the people that called into the Oxybuster hotline had never suffered from any type of chemical sensitivity before November 1992. And it was affecting again a wide variety of people and a host of health problems. It affected people from the children to the elderly. And they all had similar symptoms: severe headache, sinus problems, breathing difficulties, and skin rashes.

Finally, within the course of a short year, Oxybusters documented over 1,000 cases from people from New Jersey alone who all suffered what they felt was severe effects of MTBE poisoning.

By 1995, we collected 15,000 signatures that we presented to Governor Whitman in New Jersey. This led to the funding of the Rutgers University study, which last week, by the way, it took many years, concluded that MTBE was in fact the cause of these problems that people were experiencing.

One thing that Rutgers University did not test for—and it was briefly touched upon here—were the combustion by-products of MTBE. From what we could tell, the EPA never really seriously tested for the combustion by-products of MTBE; or if they had, it had not become common knowledge. And we learned from the auto and oil industry, not to mention the EPA themselves, yes, there was an increase in formaldehyde associated with MTBE. When you put MTBE in gasoline, even according to the California Air Resources Board, there is a 26-percent increase in formaldehyde coming out of that tailpipe.

Now, this is years before the water problem came into play.

In our opinion, MTBE is not a cleaner burning fuel. If anything, we think it is a dirtier burning fuel. It is documented. There is, according to these studies, an increase in formaldehyde, nitrogen oxides, formic acid, and others.

If it were really cleaning the air, as I have heard some people say here today, wouldn't people start experiencing a health improvement? But, no, exactly the opposite is happening. Is it any coincidence that somehow thousands of people in Alaska were getting sick at the exact same time thousands of people from New Jersey and Connecticut and other parts of the country were? Is that just a coincidence?

Take Dr. Peter Joseph, professor of radiologic physics at the University of Pennsylvania Hospital, who is also on the Philadelphia Task Force, a Harvard grad, mind you. He has conducted several studies and he has concluded that the dramatic increase in asthma in this nation is directly linked to the dramatic increase in MTBE in our gasoline supply.

Now, again, it sickens me to hear people saying it is cleaning the air. If you sit here with a bunch of people suffering from asthma and you tell them that this is good for you, I hate to see what the reaction would be.

People with asthma are worse. People who never had asthma are developing it for the first time. Again, note, the vast majority of

people who have been sickened by MTBE had never suffered from any chemical sensitivity in the past.

In Liberty, New York, I got a call from somebody called Diane Atkins back in 1993 when Oxybusters started. She said, "Art, there is MTBE in my water." I didn't follow what she was talking about. This was 1993.

It was not until early 1995, when we learned from the United States Geological Survey in Denver, Colorado, that, yes indeed, MTBE had the potential to contaminate groundwater, not just from underground leaking tanks. But it did get into the exhaust. It did get into the environment. It got into the snow-peaked mountains and it dripped down, getting into the lakes and streams and, boom, into your water.

We brought our concerns to the Department of Environmental Protection in New Jersey, to the Federal EPA. They ignored us. What was that, 5 years ago?

Spillage is another way that MTBE gets into the water, as has been clearly indicated here today.

Let me summarize by saying there are other ways, a variety of ways, MTBE gets into the water. It can get into there by spilling and other ways. But I just want to close by saying, our group supports Congressman Frank Pallone's bill, H.R. 1705, to eliminate the oxygen requirement from RFG and phaseout what we feel is an idiotic fuel additive at the speed of light, not in 3 years. We have been doing this for 7 years. We do not want to wait another 3 years.

I would like to close again by saying that it is sad that it has come to this that this issue has proven to be far more than just whether MTBE is or is not cleaning the air. It is a shame that profits and politics have been given more importance than people's health. And I urge you to do what is best for the American people, not what is best for individual business interests, and please stop playing politics with people's health.

Thank you.

[The prepared statement of Barry Grossman follows:]

PREPARED STATEMENT OF BARRY GROSSMAN, OXYBUSTER FOUNDER

Mr. Chairman and members of the Committee: My name is Barry Grossman and I live in Plainsboro, New Jersey. I am the founder of Oxybusters, a grass-roots organization made up of thousands of people throughout the country who oppose the use of MTBE and all other oxygenates in gasoline. I am here to tell you that the federal requirement to use these additives has been a grave mistake.

In November of 1992, when the oxygenated fuel program first began in New Jersey, I started experiencing severe headaches that doctors could not explain, and that medications could not relieve. When I read about thousands of people in Alaska getting sick from MTBE, the main ingredient in oxygenated fuel, I made the connection. After announcing on a New Jersey radio station the formation of "Oxybusters" to protest the new fuel, I received literally 30 calls a day from people experiencing similar symptoms. These symptoms include headaches, nausea, chest pains, eye irritation, respiratory problems and heart palpitations.

We collected more than 15,000 signatures on a petition to ban oxygenated fuel in New Jersey, which led to the funding of an MTBE health study at Rutgers University. Just last week the results of that study were released, and they confirmed what we have known for the past seven years—that MTBE can in fact cause headaches, nausea, eye irritation and fatigue, among other ailments.

In 1997, Oxybusters in California collected more than 100,000 signatures on a petition to ban MTBE, because of health complaints and widespread water contamination, which led to a study of MTBE by the University of California. That study con-

cluded that MTBE was a threat to the environment and was not a necessary component of cleaner burning gasoline. Based on the study, Governor Gray Davis issued an Executive Order to phase out MTBE.

According to the Interagency Assessment of Oxygenated Fuels, prepared by the National Science and Technology Council, all ether-based additives, including MTBE, ETBE, TAME and DIPE are highly water soluble and difficult to biodegrade. Consequently, they pose a significant threat to our water supplies. A series of studies done by the Auto & Oil industries found that oxygenates increase certain harmful emissions. MTBE increases formaldehyde, and ETBE and ethanol increase acetaldehyde. In low aromatic fuels, oxygenates also increase nitrogen oxides, which contribute to smog. Last year the National Research Council concluded that oxygenates do little to reduce smog.

MTBE is currently classified by the EPA as a possible human carcinogen. A study published last October by the University of Southern California Cancer Research Laboratory found MTBE to be a mutagen.

Those of you who think the Clean Air Act has been a success should consider the statistics on asthma. Since 1990, incidents of asthma have skyrocketed unexplainably. But we believe this increase can be explained by the increased use of MTBE, and Dr. Peter Joseph, professor of Radiologic Physics at the University of Pennsylvania Hospital, has evidence dating back to 1980 which supports this theory.

I would like to speak for a moment about what really matters most—people. Liberty, New York has had low levels of MTBE in its water supply since 1990. This pristine town in the Catskill Mountains now has some of the highest cancer rates in the state of New York. Diane Atkins, a 48 year old Liberty resident who heads Oxybusters of New York, lost her husband, brother-in-law and pet dog to cancer in the past 3 years.

Gina Wall, of Washington Township, New Jersey, was a healthy 30 year-old mother of two before moving into a house with MTBE in its well eight years ago. Since then she has undergone 19 operations for multiple tumors, bladder cancer and kidney disease.

Gary Franklin of Scarborough, Maine, had to give up his lawn & garden equipment business five years ago at age 48. Working around gasoline-powered equipment with high levels of MTBE left him disabled.

I could go on for hours, as these are just a few of the thousands of people whose lives have been devastated one way or another by MTBE. And the problems are not limited to MTBE. We have Oxybuster groups in Colorado, Arizona and Oregon where ethanol has predominately been the oxygenate of choice.

It's time to put an end to this failed process of replacing one harmful additive with another, as was done when benzene replaced lead and MTBE replaced benzene. The studies done by the Auto & Oil industries, the University of California and the National Research Council all support the elimination of the oxygen mandate. Refiners have said they can meet the emission standards of the Clean Air Act without oxygenates. Let's give them that opportunity. Our group supports bill H.R. 1705, sponsored by Congressman Frank Pallone, Jr., to eliminate the oxygen requirement for reformulated gasoline, and phase out the use of MTBE as quickly as possible, so that we can finally end this federally mandated poisoning of America.

Thank you Mr. Chairman.

Mr. BILIRAKIS. Thank you, Mr. Grossman.

I am going to turn now and go out of order at the request of Dr. Ganske that we recognize him for 5 minutes.

Mr. GANSKE. Mr. Grossman, you certainly increased the oxygen in my blood level with your presentation.

Mr. GROSSMAN. We are very passionate, as you can tell, about this issue.

Mr. GANSKE. Very passionate.

Mr. Early, the American Lung Association of Metropolitan Chicago released a report last year citing the air quality benefits of its ethanol reformulated fuel program.

More recently, the American Lung Association of Minnesota released a paper clearly endorsing the air quality benefits of ethanol stating, "The American Lung Association of Minnesota began its fight against multiple-source pollution in the 1960's; and today we

continue our support of oxygenated gasoline as a cause-effective tool for reducing tailpipe emissions.”

My question to you, then, is, why is there a discrepancy between State organizations and the national American Lung Association?

Mr. EARLY. Well, we are talking about different programs. The Minnesota program was part of the so-called Oxy-fuel program aimed at reducing carbon monoxide in the wintertime. That program has been expanded by State law. It is not required to be expanded by Federal law.

And the Lung Association fully supports the winter time Oxy-fuels program. There is no question that, in the winter time, the ability of oxygen to reduce carbon monoxide is a very important tool in achieving emission and air quality standards for CO.

The question to this committee is, is the mandating of oxygen in reformulated gasoline utilized in the summer time when carbon monoxide is much less of a problem?

So that is the difference, the Minnesota Lung Association is expressing its support for Minnesota's program; and the benefits of that program are primarily releasing CO in the winter time.

Mr. GANSKE. Are all of the State Lung Associations in concordance with the national policy?

Mr. EARLY. To the best of my knowledge, yeah.

Mr. GANSKE. Now, let me ask you: Mr. Early, you are a consultant to the American Lung Association.

Is that a paid position?

Mr. EARLY. Yes, it is.

Mr. GANSKE. Do you have any other paid consulting relationships?

Mr. EARLY. Not at this time.

Mr. GANSKE. Are you now or have you ever been funded by the MTBE industry or their representatives?

Mr. EARLY. Have I been a consultant for the MTBE industry? No.

Mr. GANSKE. Have you ever received compensation or worked for Arco?

Mr. EARLY. No.

Mr. GANSKE. Who funds your current contract with the American Lung Association?

Mr. EARLY. Well, the Lung Association.

Mr. GANSKE. The Lung Association.

Does the Lung Association receive funds for that contract?

Mr. EARLY. Well, the Lung Association receives funds for activities that I perform from the Energy Foundation.

Mr. GANSKE. And in the Energy Foundation, are some of the Energy Foundation members MTBE producers?

Mr. EARLY. Not to my knowledge.

Mr. GANSKE. Who is the Energy Foundation?

Mr. EARLY. The Energy Foundation is headquartered in San Francisco. It is a 501(c)(3) foundation that focuses a lot of its attention on environmental and energy issues.

Mr. GANSKE. Are any of the members members of the petroleum industry?

Mr. EARLY. Not to my knowledge.

Mr. GANSKE. I thank you.

Mr. Campbell, I want to give you a chance to respond because I mentioned you earlier. If the oxygen requirement was waived and MTBE was phased out, what would you use in your gasoline to ensure emissions reductions do not rise?

Mr. CAMPBELL. I assume you are talking about our company.

Mr. GANSKE. Yes.

Mr. CAMPBELL. And the reason I preempt it that way is because the solution for one company might be quite different than others.

But for us the hydrocarbon of choice would probably be alcoholate. Alcoholate has been in gasoline for decades. It has been in there for an extended period of time. Actually, because of MTBE going into the gasoline in the amount we do, we have shut down an alcoholate plant in Philadelphia and are running an MTBE plant.

I would expect that the first hydrocarbon that would go in would be potentially some toluene. But it is going to depend on the type of goal or emissions standards that we are trying to match at that point in time.

Mr. GANSKE. So toluene is a possibility?

Mr. CAMPBELL. Absolutely.

Mr. GANSKE. Are you concerned about comments that Mr. Perciasepe made about the use of toluene?

Mr. CAMPBELL. I was not here for Mr. Perciasepe's comments. We had a board of directors meeting today. But I hear people referring to aromatics as though it is one compound.

Actually, aromatics is a whole potpourri of compounds, going from benzene to toluene, orthometeparazylene and right on down the chain. So it is a broad mixture that has been in gasoline almost since the very beginning of time.

Just one more time I would like to go back to what I referred to in my testimony; and that is, if you think of the variability of refineries, if you think of the variability of blend stocks that are out there, trying to specify or mandate a formula I think is a flawed approach.

That is why what I was asking for in my testimony was tell us the standard you are trying to achieve, tell us the goal that you want, whether it is an air-toxic emission, or whatever, and then allow each of us to achieve it in the way we can.

Mr. GANSKE. That last question, Dr. Graboski, can you make a comment on increasing the use of toluene as an oxygenate?

Mr. GRABOSKI. As a replacement for oxygenates?

Mr. GANSKE. Yes.

Mr. GRABOSKI. Well, from a point of view of the gasoline you are producing, it would be fine from a performance point of view because you would get the octane back that you would lose from the oxygenates.

But I think the issue is that raising that aromatic content in the gasoline is going to have negative public health effects. Toluene will de-alcoholate to make benzene in the exhaust. And benzene is a very, very potent toxic. Toluene, like the other aromatics in the fuel, tend to increase fine particulate emissions out the exhaust, while oxygenates will reduce the fine particulate emissions out of the exhaust.

Toluene and other aromatics are precursors for much more toxic aromatic and nitro aromatic compounds that are found in the particulate matter and in the VOC exhaust. And so, even though you might be able to make the fuel that meets the mass base requirements of the Clean Air Act, my concern would be that going back to where we were in 1985, which is really what we are talking about, let us go back to now low-sulfur, low-RVP conventional gasoline as opposed to reformulated gasoline, that that is going to have public health impact.

Mr. BILIRAKIS. The gentleman from Texas, Mr. Green, for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman.

I think it is appropriate both the American Lung Association and Mr. Campbell talk about alcoholates would be the substitute and the preferred substitute.

Are we where we were with MTBE 10 years ago? I do not really want to drink alcoholates either, as well as MTBE. If we use that as a substitute that will have the same octane ability that MTBE would have, what would that do to groundwater or all the other problems that we see?

Mr. CAMPBELL. That is absolutely not the case. First of all, it is alcoholate. And it has been in gasoline, it has been a fundamental part of our processing ever since certainly I have been in the business 40 years, and it was there before I came in. We have it in all of our refineries. It is almost as pure hydrocarbon as we put in gasoline. It is a high octane component, and it is a preferred component over certainly aromatics or certainly oxygenates in gasoline.

Now, to the point that somebody raised earlier that there probably has not been enough studies looking at all the variety, dozens and dozens, of compounds that happen to be in gasoline, I would imagine that would be the case. But I would think that of all the hydrocarbons that you can think of to replace MTBE, there is not one more purer or more simple than alcoholate. And it is already there.

Mr. GREEN. Again, not being here in the late 1980's when MTBE was being discussed and I was concerned, and my colleague from Wisconsin, Mr. Barrett, you know, there was a 1987 memo and of course the industry participated. You wanted to follow up?

Mr. EARLY. It is certainly a legitimate question to say, let's say if we doubled the amount of alcoholates in fuel, what are the public health impacts of doing that. And that is why one of the Blue Ribbon Panel recommendations was to do much more research in this area so we do not.

I mean, MTBE was already in gasoline, and then it got dramatically increased. And then we found out that that was a problem. So we do need to have the research on alcoholates and other components of gasoline so that we do not make the same mistake again. I mean, we should learn from our mistakes, there is no question.

Mr. GREEN. Mr. Vaughn, I understand that numerous health organizations said that boosting the amount of ethanol in reformulated gas increases the VOCs, CO, and NO_x.

Is it your testimony that ethanol does not cause such increases in comparison to MTBE?

Mr. VAUGHN. Congressman Green, it is my testimony that, by law and Federal regulation, we are not allowed to.

In Chicago, in Milwaukee, in northern Illinois and northern Indiana, two of the reformulated gasoline requirement areas, approximately 420 million gallons of ethanol is sold in the Federal Reformulated Gasoline area, and it is not allowed by law to do that.

Can it theoretically increase and does it increase? It can. It is not allowed to in reformulate gasoline. And the gasoline needs to be manufactured in such a way as Mr. Perciasepe said that would accommodate that, meaning a sub-vapor pressure fuel is necessary to accommodate ethanol in the reformulated gasoline program.

Mr. GREEN. The Sierra Club testified in the Senate Environmental Committee in 1994 and said that they saw expanding ethanol uses as potentially increasing global warming, increasing smog, increasing air toxics, increasing water pollution, and damaging the sensitive habitat areas. And that was, again, in August 1994.

How can this committee be assured that, knowing that testimony that was recorded then, that increased use of ethanol would not cause environmental backsliding from current levels as achieved by MTBE? Or is the Sierra Club wrong?

Mr. VAUGHN. I think I remember their testimony back 6 or 7 years ago from the Sierra Club on this issue. But there are certainly a range of recent studies, in fact, one just released 2½ weeks ago commissioned by the Department of Agriculture on the very issue of global warming and a range of biofuel plants, ethanol plants being among them. And what they documented is there is a modestly efficient plant, a modestly efficient farmer producing ethanol with fairly good but not exemplary techniques and can produce a tremendous reduction in CO₂ emissions on an energy-per-content basis.

Mr. GREEN. Let me follow up since you mentioned that average farmer. Let us turn to water quality, then, since that is why we are here today.

Obviously, expanding ethanol production is not without its water quality implications, particularly downstream for corn production; and those of us who live and work along the Gulf Coast know only too well what happens when nonpoint pollution in the Mississippi increases.

The Environmental Defense Fund told the EPA that with a poor environmental record of modern-day agriculture, environmental harm that can be caused by greatly expanding corn ethanol production would far outweigh the marginal air quality benefits that use of ethanol may have on reformulated gasoline. Again, that is from the Congressional Record of 1994.

How can we be certain that the water quality, if we increased ethanol, like my colleagues from the Midwest or Illinois like to do, that we would not see a continued problem or even greater problem with water pollution particularly in the Mississippi Basin?

Mr. VAUGHN. Yes, sir. I think that there are a couple of answers. But among them, we probably are not talking about a tremendous amount of increase in corn production. We are talking about the increased utilization of the corn crop. We are using the starch compo-

nent of that corn, about 600 million bushels of it today. We produce about 9 billion bushels.

We are also going to be moving into crop areas such as sugar beets, a range of bio-mass feed stocks in your part of the country, some cane, some bagasse being developed down in Louisiana.

But the point about ethanol is that you—if you get stuck back in 1994-1995 studies, those are based on an analysis done 4 or 5 years earlier. All of the recent analysis from the Department of Agriculture, Department of Energy, and virtually every State organization, including the Texas National Resources Commission, points to a far more energy efficient, far more environmentally efficient utilization of resources to produce high-quality, high-impact, high-value, low-polluting ethanol.

Mr. GREEN. Let me follow up, Mr. Chairman, in closing and just say I don't know if the environmental groups have changed, but maybe we could with 54 percent subsidy; and that is again an issue that another committee has to deal with. But we might be able to produce something else that might be cleaner if we would—as a government would subsidize it like we do ethanol.

Mr. GREENWOOD. Thank you.

The Chair recognizes himself for 5 minutes. Let me direct a question, if I may, to Mr. Campbell. Your written testimony indicates that the refining industry can make cleaner burning fuels without oxygenates at the mandated level. Given that the oxygenates currently displace a significant volume of the other more toxic components of gasoline, how would refiners maintain the toxic emission benefits of the current RFG Program?

Mr. CAMPBELL. Mr. Chairman, again, I have to say that that is going to differ from one refinery to the other. But what we would be doing, if in fact we are given the flexibility, would be reducing MTBE. As I indicated, we would be replacing compounds, at least with—certainly within our own company, initially alkylate, which we would believe is a less toxic substance; probably more reformate; and potentially some of the other aromatics, certainly not benzene.

But the important point is, we are convinced that we can be able to manufacture that low-oxygenate or even a nonoxygenate gasoline and have an air toxics reduction that is in excess of what the EPA is requiring for the year 2000. We take the formulation, we put it into the model, and that is the results we came out with, sir.

Mr. GREENWOOD. Why can't the refining industry simply switch to ethanol and still meet the oxygenate requirement of the Clean Air Act?

Mr. CAMPBELL. First of all, let me indicate that we, as a company, are probably one of the largest manufacturers in the United States of ethanol and gasoline, so we have extensive experience in the Midwest. In fact, as we speak, we are expanding into the Pittsburgh area. So it is a compound that we use a great amount of.

It has several problems. One is manufacturing. If you just try to instantly do it, you would have a supply problem. Logistics, it has to be distributed separately. But those can be overcome. I mean, with a lot of time and a lot of money, you can overcome that.

The key problem with ethanol in gasoline and the reason that we don't use it in the Northeast United States, but we do use it in the

Midwest, is because of the environmental characteristics, as Mr. Grumet testified. And the problem with ethanol, it has a very high RVP or vapor pressure, which causes VOCs or volatile organic compounds, which in turn bring about smog formation. The only way that can be overcome—that is why it has a 1 pound RVP waiver, because when you put it into gasoline, it requires a 1 pound waiver from the specification.

If, in fact, you took ethanol and eventually put it into the Northeastern system, got the distribution, had the plants there and got it into the system, and mandated that the RVP remain the same, or the total blend, as it did before. That would mean the blendstock that we put the ethanol in would have to have even a much, much lower RVP, around 5.8 pounds. I will tell you that is extraordinarily expensive to accomplish, and to do that means you also remove more barrels out of the gasoline blendstock.

So it is because of that characteristic that the companies have not chosen to put ethanol in gasoline in the reformulated gasoline areas or out in California in the CARB area. But it is very popular and used elsewhere.

Mr. GREENWOOD. I am going to yield the balance of my time, and I am also going to yield the chair to the gentleman from California. I am desperately trying to catch a 4 o'clock train. I promised my daughters I would be home tonight for dinner. So thank you.

Mr. GROSSMAN. I have a 4 o'clock train to catch, too. Would that be okay?

Mr. BILBRAY [presiding]. Sure. I think you articulated your position quite clearly and distinctly.

Mr. SHIMKUS. Mr. Chairman, he needs to change the name to MTBE Busters instead of Oxybusters.

Mr. BILBRAY. I guess we will take a look at the mandate again. And again, let me say sincerely as somebody who has been a little involved in this process over the last decade that, Mr. Early, I appreciate your intestinal fortitude for being willing to stand up and point something out. It was sort of interesting that Mr. Vaughn was articulating that the attack on ethanol was based on science that was 5, 6, 10 years old. And in 1995, the data available then was not what is available now.

The issue is that the Lung Association is taking a look at the information you have today and have come to a conclusion as a result.

Mr. GRABOSKI. I would observe that the testimony that Mr. Green was quoting from the Sierra Club was delivered by myself. I would also agree with Mr. Vaughn that we know more about the global warming impacts of ethanol in light of changed agricultural practices. And we need to make the decisions on modern information. That is why we are emphasizing the change in our position, which, you know, the Lung Association supported the 2 percent mandate in 1990. We know a lot more now than we did then.

Mr. BILBRAY. That's what I appreciate. I know there are those in this city that want to defend the status quo, that will attack the Lung Association because they have taken a position that a lot of people in Washington don't appreciate. But I was very, very impressed with your testimony, as you pointed out, that we have learned much more about cleaner gasoline, as stated, and that the

Lung Association believes that the experts at the California Air Resources Board know more about producing clean fuels than any other government entity, bar none.

Do you want to expand on that statement to some degree?

Mr. GRABOSKI. Well, as you well know, they have been at it a lot longer. And they have more people looking at the issue. They have more data available to them. They generated more data. They have, as you know, been struggling very much in the last couple of years with regard to the MTBE problem, and a tremendous amount of money and research has gone into trying to solve that problem. They are asking for a waiver because they have come to the conclusion that a 2 percent oxygen requirement gets in the way of being able to produce cleaner gasoline while, of course, phasing down—phasing completely out MTBE in California by the Governor's executive order.

Mr. BILBRAY. But as your testimony said, CARB has provided the evidence that the 2 percent requirement actually impedes the ability of the refiners to produce a new generation, which will be an evolutionary step beyond. And you want to see that step made, so the initial step to even cleaner gasoline is the elimination of the 2 percent mandate on the State of California?

Mr. GRABOSKI. Absolutely.

Mr. BILBRAY. Okay.

Mr. Strickland.

Mr. STRICKLAND. Thank you. And my good friend from Texas has asked for any time that I may have left over. So I would like to ask one question, if each of you would please respond; and then I will yield the rest of my time to Mr. Green.

The question I would like for you to respond to is: Can you estimate how the removal of the mandate would affect the current usage of the two primary oxygenates, MTBE and ethanol? Would each of you please respond to that briefly, if you could?

Mr. BILBRAY. Point of clarification, the mandate totally or a mandate with a backsliding clause included?

Mr. STRICKLAND. No backsliding clause.

Mr. BILBRAY. With?

Mr. STRICKLAND. No, without.

Mr. BILBRAY. Without the backsliding clause.

Mr. CAMPBELL. Assuming you want to go from left to right—

Mr. STRICKLAND. If you would, Mr. Campbell.

Mr. CAMPBELL [continuing]. I will be glad to give it a try.

I believe that if, in fact, we eliminate the oxygenate mandate and give the flexibility to refiners, then what will happen is, MTBE usage will drop considerably; and as I indicated in my testimony, I think it will happen ultimately faster and probably further than people thought when we met as a panel. The reason is because the heightened awareness of the MTBE issues. And I think companies in general would—many of them are going to want to be able to advertise, "Our gasoline is MTBE free." And I think that will ultimately happen.

As far as ethanol is concerned, I believe that almost regardless of what you do, the amount of ethanol in gasoline is going to increase. And the reason that I say that is, if you look at all the things that are going to happen to the gasoline pool in the United

States—lower sulfur gasoline, the new gasoline is coming out right now, RFG 2—every one of those things tends to lower the octane of the pool, and refiners need to replenish that. I think in many ways they will be replenishing that with ethanol.

So I really fundamentally believe the amount of ethanol is going to go up even if no mandate is set on that. As I indicated, we are increasing our usage of it and expanding it to western Pennsylvania today.

Mr. GRABOSKI. Were we banning MTBE as a part of your question?

Mr. STRICKLAND. I'm sorry, sir?

Mr. GRABOSKI. Were we banning MTBE as a part of your question?

Mr. STRICKLAND. Assuming we are not.

Mr. GRABOSKI. We are not. So the market is going to be exactly the same, but what we are going to do is get rid of the oxygen mandate.

I think the issue is what refiners will choose to do. I agree with Bob Campbell that ethanol consumption is going to stay the same, or it is going to increase. I mean, I think that is going to happen.

What happens with MTBE, I am really not sure about. About a third of the MTBE is produced by the refiners, a third is produced by the merchants like Lyondell. And I think about a third is imported from Saudi Arabia. And I think maybe the refiners, some of them who produce MTBE, now want to get out of the MTBE business. But that still leaves two-thirds of the MTBE around.

My guess would be that without some kind of a push on oil refiners, together to get rid of it, that what you are going to find is that some will want to use it. And when some want to use it, they will all want to use it. I think we will have status quo, maybe slightly reduced MTBE, but I really don't see it going away. I mean, I think if you want it to go away, you have got to ban it. If you say, we are going to get rid of the oxy rule, I really don't see the situation changing very much.

Mr. EARLY. Based on the evidence that was presented to the Blue Ribbon Panel, I would conclude that if you just got rid of the oxygen mandate, MTBE usage will go down, ethanol usage will go up, but toxics will also go up. In other words, we will see some backsliding, which is why you need the other pieces that we are advocating.

Mr. STRICKLAND. Okay. Thanks.

Mr. YOUNG. It is important what I have heard to this point. Actually, I haven't at any point given any thought to elimination of oxygen standard without any backsliding, but clearly I think we would see a substantial reduction in MTBE.

Now, when you do that, you obviously have to ask yourself what replaces it. I think you could possibly see ethanol move up, because ethanol has particular good characteristics from an octane standpoint. But, clearly, I think you have to point back to the backsliding issue. As far as I am concerned from air quality standpoint, we would degrade as a nation as a result.

Mr. VAUGHN. Congressman, the ethanol perspective would be that the ethanol expansion or development would probably be stalled. We would probably see some reduction in the use of eth-

anol, certainly reformulated gasoline areas where we are currently seeing a modest, but important amount of ethanol being used.

But I think if you don't take action to deal with this problem—for example, the way Governor Gray Davis has in California—to set a timeframe and to actually eliminate the use of this product, a ban will create—excuse me, a phaseout or elimination requirement will create the exact situation that Mr. Graboski pointed out. A third of the product will go away, but we will see more of this product used in more markets, maybe attainment markets. But the problem, if it is water contamination you are concerned about, will spread.

I think Mr. Early is actually on the mark, excuse me, that toxics will go up.

Mr. GREEN. I think you yielded to me.

Mr. STRICKLAND. Yes.

Mr. GREEN. Mr. Chairman, I couldn't help but hear outside that your concern about quoting 1994—and let me quote Mr. Grumet's testimony today where he talks about repeal of 2 percent on page 3: "while ethanol usage is far preferable to MTBE from groundwater perspective and promotion of ethanol can further a host of energy, agriculture, environmental goals as ethanol mandate is not sound environmental economic policy for our region. Due to its high volatility and resulting increase in evaporative emissions, the use of ethanol during the summertime ozone season may actually exacerbate our urban and regional smog problems."

So that is not from 1994. That is from testimony that we heard just a few minutes ago.

Let me, if we have more time for—a question, Mr. Chairman, for Mr. Campbell.

Mr. Campbell, you have been involved in the refining industry, you said, for 40 years. You testified that your company used MTBE in its gasoline in the early 1980's for oxygen—I guess for increased performance. Would you agree with the characterization put forward by the "60 Minutes" program and others, that we did not know anything about the health effects of MTBE when we started to use it in the late 1970's and early 1980's?

Mr. CAMPBELL. Congressman, what I would like to say here is that I am here today to talk about where we are and how we go forward from here. And the reason I draw that distinction is because, in the intervening timeframe, very rapidly, there have been a number of suits filed, class action suits against refiners, manufacturers and everybody, talking about how we got to where we are and what was known back when.

So I would respectfully have to decline to answer that question.

Mr. GREEN. Okay.

Mr. Barrett then talked about the memo that was from 1987. And I have the resulting study, that was EPA released, that was December 1997. I guess it was that follow-up, the EPA fact sheet on drinking water consumer acceptability and advice on MTBE. So I admit it kind of worries me that it took EPA from 1987 to 1997 to do something. But some of the reports in that study again had been testified about today, you know, the concern about groundwater resources.

But let me ask one last question of the panel, because it came up in our last panel. The water pollution problem we have with MTBE, have any of you had any experience you can testify to, whether it is from the burning of MTBE in a car or truck, or is it from leaky source tanks, people spilling it when they fill their tanks?

Is there any evidence that MTBE is getting in our water supply from being burned as a fuel?

Mr. VAUGHN. Mr. Congressman, there is an enormous amount of data coming out of California from both the Energy Commission and a study that has been conducted throughout 11 months of the State of California to review MTBE sources. And there is a tremendous amount of data that indicates that both the range of leaks from tanks, shipping points, car accidents, and air or emissions deposition. And all that documentation, if nobody else has made it available to you, I certainly will.

But the California has completed a thorough fate analysis on these issues, which is the most updated analysis on both ethanol and other oxygenate alternatives. That is also to be part of the committee's deliberations or part of the record.

Mr. GREEN. I appreciate that response. But again, I have heard or seen most of the effort was that the pollution problems in water, groundwater, was because of spills; and again, nobody has quantified it to say 5 percent, 10 percent, 20 percent or whatever it could be that would come out of burning fuel in a vehicle. Any other response?

Mr. EARLY. Well, evidence presented to the Blue Ribbon Panel, some of which is the evidence that Mr. Vaughn referred to, indicated that air deposition from MTBE was a source of contamination of water resources. These would primarily be, obviously, lakes and streams, some of which are hydrologically connected with groundwater. But I think the evidence also showed that that was, you know, not the most important source of contamination; that leaking, spilling, and other sources were far more important.

Mr. GREEN. Okay.

Mr. CAMPBELL. Congressman, all I can say is, all of our experience in cleanup has been in a result of spills or leaks.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. BILBRAY. The Chair will yield himself 5 minutes as indicated by the previous Chair. I would like to remind the panel and the Members of the Congress that, as Mr. Vaughn pointed out, California has done an extensive study on this. And Lake Tahoe, which was identified as one of the cleanest lakes in the world, has had a problem with this material because of 20 percent of the blowby of two-cycle engines. And I guess it could fall under Mr. Green's presumption that this is unburned fuel, but it still—

Mr. GREEN. It spills out of the tank.

Mr. BILBRAY. It is not the spilling out of the tank. It is actually the fact that, during the combustion process, the blowby is—during the compression process, a two-cycle is not a sealed system. It is an open system, and that the fuel blows right past the cylinder and right back out the exhaust and drips out into the water. That is why two-cycle is being outlawed in Tahoe, and why the California

Air Resources Board right now is requiring a whole new redesign of two-cycles for the State of California.

That said, I think that we need, and I appreciate you bringing up just how much we are working on this stuff. It still comes down—Mr. Early, you live back here on the East Coast?

Mr. EARLY. I live in the Washington, DC, area.

Mr. BILBRAY. Thank you. Let me just tell you, and I know the members are sick and tired of hearing it, I am glad to see that somebody on the East Coast appreciates what we are trying to do back West. And I am glad somebody back here reads our reports every once in a while.

Mr. EARLY. Well, I would just observe the Lung Association just got through a vigorous campaign supporting EPA's regulations so-called tier 2 regulations to crank down on tail pipe emissions for new automobiles and to lower the sulfur in gasoline. And there is no question that California's program, which preceded it, was essentially the clean air road map for that program. And so, obviously, we pay a lot of attention to what is happening in terms of air quality efforts in California.

Mr. BILBRAY. Well, then, can I ask us all to remember to use new jargon—EPA uses it, you just used it—"tail pipe emissions" is something we need to avoid. "total auto emissions" is our new slang, seeing that we have found that evaporative emissions are a major problem that we have underestimated grossly. And maybe when we are talking between EPA and CARB, one of the problems is we are using barn testing there and using total emission as a standard where they are still working off of the tail pipe issue.

But, Mr. Early, the Lung Association was really pointing out a point that I would like you to expand on. The California fuel system has actually preempted the Federal. In fact, Senator Kennedy once said that he didn't want the Federal fuel to stand in the way of California, but more to follow its lead. That aside, the air laws in this whole country, the regs and the rules and everything else, are pretty well based on one assumption; and that the goal is to attain the national ambient air quality standards, right?

Mr. EARLY. As expeditiously as practicable.

Mr. BILBRAY. As practicable. So if that is the overriding—you know, golden rule of the implementation of our clean air strategies, how do we reconcile that with your testimony that points out that the 2 percent content may create a barrier to California attaining that golden rule?

Mr. EARLY. That is why we—it is a problem, which is why we support waiving the 2 percent requirement for California. But if it makes sense for California, one might argue that it makes sense for Federal RFG as well.

Mr. BILBRAY. So the point is that the Lung Association has recognized what CARB has recognized, which is that the content specific standard, although it may be appreciated by the ethanol industry, may be a barrier to local jurisdictions from acquiring their mandates under the Clean Air Act.

Mr. EARLY. Well, as an example of why the content requirement may not make a lot of sense, evidence presented to the Blue Ribbon Panel showed that benzene levels in the Chicago/Milwaukee market are among the highest of any RFG area in the country. Now,

this is also the market you just heard testimony on, that is using 10 percent ethanol in their RFG. So, you know, I think it illustrates more than anything else that making gasoline is very complicated, and that it is best to tell refiners what you want in the way of clean air results rather than mandating specific—inclusion of specific things in the fuel.

Mr. BILBRAY. More like what we are doing with the auto industry where we are starting to require tail pipe—total emission standards, and not necessarily telling them the technology that they have to use to clean it up.

Mr. EARLY. Correct.

Mr. GRABOSKI. I have to object. Benzene levels and ethanol levels in Chicago are not related, and it is a separate economic issue as far as refining is concerned, compared to other places. There is no petrochemical market for benzene in the Midwest and so it is not extracted. And that is the reason why the benzene levels are higher. It is not because of using ethanol.

Mr. EARLY. I don't disagree with you. My point is that just adding ethanol doesn't necessarily guarantee you that you are going to have low levels of benzene.

Mr. GRABOSKI. No. The thing that guarantees that you all have benzene levels below 1 percent is the standards of the Clean Air Act, which represents the cap.

Mr. EARLY. Absolutely. I am with you all the way.

Mr. BILBRAY. And I think that we have seen that in California the caps are pretty stringent.

But, Mr. Young, do you want to—everybody is getting their little piece of this question. Do you guys want to—the fact is that there are those that are saying—let's go back to the good old Washington way of doing things, and let's not say what we want to see; let's just outlaw what we say we don't want to see. There is a big outcry right now that the answer to all our problems is to outlaw your product nationally.

Mr. YOUNG. I would contend that you have to go to the source of the problem, which is underground leaking storage tanks. A lot of people, I think, we have heard today say that the primary source for any actionable level associated with MTBE contamination of groundwater is clearly underground storage tanks. Being in the refining industry and the petrochemical industry, I don't accept the fact that tanks will always leak. But I accept the fact that they can leak, which, to me, requires monitoring of all tanks to ensure that when they do leak, it can be fixed before they contaminate groundwater.

Mr. BILBRAY. In all fairness, Mr. Young, I would challenge you to find a State that has had as aggressive an underground tank surveillance and replacement system as the State of California, and we still are running into this problem.

But I guess, Mr. Early, your comment is, while this 2 percent mandate exists, it is not practical for a State like California or whatever to be able to implement a ban if we want to do it. I know some people are supporting a Federal ban, but right now, would the 2 percent oxygen be almost tying the hands of local jurisdictions to be able to implement a ban if they want to implement it?

Mr. EARLY. That goes a little further than I am comfortable with.

Mr. BILBRAY. Okay.

Mr. EARLY. What California is wanting to do right now is to make a gasoline that is even cleaner than the gasoline that they have been requiring. And they are saying that the 2 percent requirement makes that much, much more difficult. In other words, you could have a cleaner fuel if you didn't have to meet the 2 percent mandate than if you do. They are not saying—they have not said that you can't meet the mandate. In fact, you know—I mean, the California Resources Board has said, you know, refiners will meet the 2 percent requirement if it remains in the Federal law, and they will meet clean gasoline—California's cleaner gasoline standards.

But they have also asked for a waiver because they said we could—we could get an even cleaner gasoline and make even more progress toward meeting ambient air quality standards if we didn't have the 2 percent requirement. It is mostly for the reasons Mr. Campbell explained; you have got to crank down on the refining process in order to compensate for the volatility of ethanol and some of the other increases in air pollution caused by the presence of ethanol, which is the only commercially available oxygenate in California.

So the question is, rather than doing that, why don't we get rid of the 2 percent mandate and crank down on those pollutants and make a cleaner gasoline, rather than going through all this effort just to accommodate the 2 percent oxygen requirement.

Mr. BILBRAY. I appreciate your testimony because you bring us back to where we should be, not talking about ethanol or methanol, but talking about the fact that the 2 percent was put in there for clean air strategies, and the 2 percent was supposed to be a quality control. And, at least in California, we are recognizing that the 2 percent has now become an obstruction to quality control rather than an aid.

I appreciate your getting us back to the fact that it is air pollution we are talking about, not one substance or another.

Let me yield to our colleague, Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. I know Mr. Graboski wanted to respond to the 2 percent debate. You have time now, sir, to respond.

Mr. GRABOSKI. I would contend that the gasoline without oxygenate in California is not going to be cleaner than gasoline with oxygenate in California. I would further contend that while I think that California RFG 2 is a great fuel, I think that California RFG 3 provides the refiner with the flexibility to produce fuels that are not cleaner, but fuels that are dirtier than fuels that are in the marketplace now in California. And I am willing to debate that point.

Mr. BILBRAY. The question—

Mr. SHIMKUS. Mr. Chairman.

Mr. BILBRAY. Go ahead.

Mr. SHIMKUS. It is my time. Thank you.

Mr. BILBRAY. Go ahead.

Mr. SHIMKUS. I could yield to you if you would ask.

Did you want to finish, Mr. Graboski?

Mr. GRABOSKI. Yes. California RFG 2 has a tail pipe specification, and it has a vapor pressure cap. California RFG 3 doesn't have a tail pipe specification anymore. One can do like an EPA complex model, and that is, tradeoff evaporative emissions for tail pipe emissions.

Under California RFG 2, the tail pipe emission cap basically limited the refiners ability to increase aromatics in gasoline and increase the T-90 of gasoline. But under the new regulation, the refiner is provided flexibility to both increase aromatics and increase T-90.

While ARB and CEC did an economic study that showed that putting alkylates in gasoline would produce a cleaner gasoline, the problem was that the study was predicated on the fact that refiners would use the base formulation of California RFG 2 in trying to meet the California RFG 3 rules. And that is basically not what is going to happen, because a constraint has been lifted; the refiner has been given flexibility. And he will increase the aromatic content of his gasoline, and he will lower his vapor pressure, and that is how he will meet the rule; and that will be not as clean a gasoline as the gasoline that is being sold now.

Mr. BILBRAY. Will the gentleman yield?

Mr. SHIMKUS. As long as the chairman is very generous in making sure that I can get my final questions in.

Mr. BILBRAY. First of all, the assumption that all oxygenates would be taken out in the California market, I don't think you or I have ever seen any suggestion that that was going to happen, right?

Mr. GRABOSKI. No. But the point is that, in trying to justify the fact that the only—that the waiver should go—the waiver should be awarded because air is guaranteed to be improved. ARB has said that the gasoline formulation that they propose is going to be the one that is in the marketplace.

And I grant you that if oxygenates are in the marketplace—if they are in the marketplace, the gasoline will probably be different than what ARB proposed it would be. But then we would get the environmental benefits. And so, therefore, we have oxygenates. We don't have these environmental benefits that CARB is asking for. So why are we even debating this?

The only way that we should reduce the waiver—award the waiver is if we are convinced that that is the gasoline that is going to be made, and those environmental benefits will exist. And the refiners are not going to make that gasoline, and the reason they are not going to make it is, they have to buy 10 percent of their gasoline from Texas and other places as alkylate, and they have got to buy another 10 percent of their supply from Texas and other places as California RFG 3, because under the scenario that is proposed, they can't make it all. And I don't think the refiners are going to operate that way.

Mr. BILBRAY. So your assumption is, the California regulatory system is too lenient to be able to implement a program like this.

Mr. GRABOSKI. No. What I am saying is that the California regulatory system, as it was under California RFG 2, effectively capped what the refiners could do by saying that you—that you had to meet both separate exhaust and evaporative emissions standards.

And I think that is very good. That is better than the Federal program, which said you can add them together.

Mr. BILBRAY. I appreciate that. I was the one who made the motion to do that.

Mr. GRABOSKI. But what has happened with California RFG 3, is you are now allowed, like in the Federal program, to tradeoff exhaust emissions for evaporative emissions; and when you do that, that opens up the game to be very, very flexible and make gasolines very, very far different than what ARB thinks the gasolines will be.

And if you examine the economics of where a refiner is likely to go in the real world, he is going to go toward cranking up his reformer the way he used to run it. He will try and buy some alkylate, but he is not going to find a lot because it is not generally available in the marketplace. But he will go buy natural gasoline to control his T-50 problems. And that fuel that comes out is not going to offer any NO_x benefits, which is what California wants.

Mr. BILBRAY. In all fairness, Doctor, in 35 years in its administration, I would be very, very questionable of, first of all, that California has ever retreated from its air quality standards, that California has ever looked the other way when the pollution index went up, and the fact that California has not only continued the pressure, but it is proven it has got the administrative ability to respond to the glitches when they do show up.

I think that we have been litigated in court. We have been sued by people around this table to try to force us toward going other ways. And both the scientists in the general field and the courts in the general field have substantiated the fact that California usually is very, very substantial in addressing that thing. And to be frank with you, I sit there and look the stuff that we are still doing and we have to live with in California. And then to see somebody in Washington say, somehow California is going to backslide, I challenge you on consumer products, on emission issues, on design—unique design.

Mr. SHIMKUS. Mr. Chairman, can I reclaim my time?

Mr. BILBRAY. I just challenge saying what State has done better, who has done better, and the EPA has done better.

Mr. GRABOSKI. I don't know that the EPA has done better. I would respond by saying that I am glad that California could respond in the case that there is environmental backsliding. And I will look forward to seeing that happen in the future.

Mr. BILBRAY. Thank you.

Mr. SHIMKUS. Dr. Graboski, you are from Colorado; is that correct?

Mr. GRABOSKI. Now or originally? Originally, I was from New York and New Jersey. I don't like to talk about that too much, but I live in Denver, Colorado now, yes, for 22 years.

Mr. SHIMKUS. Mr. Campbell, I will go back, but I have got to ask a question first, and I have got to make sure I have got this covered.

Because the debate has been asked—the question has been asked, if MTBE is banned, how can ethanol expand to meet the market? The chairman has asked me that numerous times.

Mr. Vaughn, could you address the expansion of the supply?

Mr. VAUGHN. Thank you, Congressman.

Mr. SHIMKUS. And then follow up on—the other question that has been asked today is how—the increased costs or inability to get ethanol from point A to point B throughout the country.

Mr. CAMPBELL. Excuse me, before Mr. Vaughn answers that question, I'm not sure of the protocols, okay, but I have a guaranteed, cannot-miss flight that I have to leave right now for unless somebody has a question.

If I can be excused, Mr. Chairman, I would very much appreciate that.

Mr. SHIMKUS. I am sure you can, Mr. Campbell.

Mr. BILBRAY. Go ahead, Mr. Campbell.

Mr. CAMPBELL. What I was saying is I have a guaranteed, cannot-miss flight that I have to leave for. If there are any questions.

Mr. SHIMKUS. I understand. I think many of us are in the same position. In other words, you can go.

Mr. BILBRAY. Thank you, Mr. Campbell. I appreciate your testimony. It is not every day we see the Lung Association and an oil company agreeing on anything.

Mr. GREEN. You can follow the Oxybusters.

Mr. SHIMKUS. MTBE Busters, I think that is what we are going to name them.

Mr. VAUGHN. I will also try to be brief, Mr. Shimkus, as Mr. Campbell is leaving the room.

One of the expansion opportunities we are seeing right now is in the Pennsylvania area, a tremendous amount of activity going on. Carol Browner just 2 days ago, a meeting with 11 Governors, put a challenge to them. Could ethanol—if we don't grant the California waiver, could ethanol expand? How? How could you do it? How quickly could you do it?

Today our industry released an analysis that documents exactly how that can be done. You start out with the point that there is twice as much oxygen in ethanol as there is in MTBE. Therefore, you need half as much volume. Right now, today, the current ethanol industry supply of the surplus capacity documented by the Energy Information Agency is 275 million gallons of surplus production—much of it in the Rocky Mountain West. This, by the way—is more than sufficient to meet the minimum oxygenate requirement right now, today, for the State of California. All of this is going to be taken from Governors in the Midwest and in the Southeast and given to the Federal EPA, along as with an expansion plan that complements Secretary Glickman's plan, Secretary Richardson's commitment, and Secretary Daley's new and strong enthusiasm for expanding the production and use of this product.

Again, it is all in the context that we are very confident, given Governor Gray Davis' leadership in California, having completed an 11-month fate analysis on ethanol, that there is going to a very strong role for ethanol as a renewable oxygenate, meeting—and I think Mr. Graboski is absolutely right, exceeding clean air standards now being implemented and improved in California, with ethanol.

Thank you for the question.

Mr. BILBRAY. I might point out that is without the mandate or with the mandate. In fact, with the mandate, it is a 7 percent in-

crease. Without the mandate, as Mr. Early has pointed out, it is a 1-cent reduction. But the ethanol expansion is going to be there regardless.

Go ahead, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. Graboski, I appreciate your pointing out that California, even though there be may some sensitivity to the backsliding amendment to an earlier bill, that their fuels could be dirtier without an oxygenate requirement.

But let me, first of all, Mr. Vaughn, let me ask you one—that information about the California non—you know, if it is nonpoints pollution by MTBE, I would appreciate it. And maybe Mr. Bilbray has it. If you have that report, if you could provide it to the committee, I would like to see it.

Mr. VAUGHN. Yes, sir.

Mr. GREEN. Let me ask you one last question. Page 85 of the Blue Ribbon Panel report talks about ethanol and the health effects of it. Obviously there is some ethanol in all of our bodies, although some more than others, maybe. Health effect questions have been raised, however, about potentially sensitive subpopulations. In addition, increased use of ethanol may result in an increase of certain atmospheric trends, formation products such as PAN and acetaldehyde, although the extent of such increases are unknown. PAN, which has been shown to be mutagenic in cellular research, is known as a toxin to plant life and respiratory air to humans. Combustion, by-products of ethanol may also cause adverse health effects.

So could you comment on that part of that report?

Mr. VAUGHN. Congressman, I certainly want to tell you how much I appreciate the fact that every report that you are bringing up is getting closer and closer to this precise moment. And I did in no way to disparage you that you were suggesting 1994 data earlier. My trusty staff aides handed me something that I could probably read from.

Let me just tell you that these issues have been brought up. And, again, I will make certain that I will get to your staff directly.

The California complete analysis, the fate analysis, 11 separate technical documentations, PAN was absolutely debated, discussed, and thoroughly reviewed. And all of these pollutant issues, upper atmospheric, mutagenic issues have all been debated and discussed. And ethanol was given by the Governor of California and the State of California a clean bill of health and an A on the report card. We are looking forward to being in the market.

I think Chairman Bilbray points out, as Governor Davis told the President on Monday, they fully expect to have a great growth of ethanol use in California, something they would not allow to happen if they weren't entirely, completely confident of its environmental and economic impacts in the great State of California. We are confident about that.

Mr. GREEN. Then the Blue Ribbon Panel was wrong in their study?

Mr. VAUGHN. No, sir. I didn't mean to suggest that either. I think what they were suggesting at page 84, as I recall, was that

there are issues, there are concerns, and they ought to be addressed. We fully agree with that.

But since that report was completed, the California ethanol fate analysis has been submitted. It was a peer-reviewed analysis by some of the finest institutions of higher education in the great State of California and have been approved now by the California Energy and Environmental officials, and signed off on by the Governor.

So I am just saying that, as the data is coming out, the questions are being raised. We are attempting—in this case, California responded and answered some of those questions in a very efficient, highly technically proficient fashion. But I will make sure I get that entire record to you, sir.

Mr. BILBRAY. Any more questions?

I want to thank you. It is nice to hear somebody congratulate California when they agree with their data.

Let me say I think we have all come to a conclusion. As a Californian, I realize why the original law kept California's air quality, gasoline program separate from the rest of the country. I regret that the 1990 act tied us hip to hip with the rest of the country. I think this hearing was about what we are going to do outside of California. I just hope that we are able to work together.

I don't think there are any exclusive agenda here. I think change sometimes scares everybody. But the fact is that we have got to learn how to do things better. Just as a 1990 car is not going to be the most environmentally friendly, so we need to make sure that we have a 2000 model for our clean air strategies.

Thank you very much. Three days for each member to introduce written statements and testimony. This meeting stands adjourned.

[Whereupon, at 4:06 p.m., the subcommittee was adjourned, subject to the call of the Chair.]

[Additional material submitted for the record follows:]

(RMD)

Congress of the United States
Washington, DC 20515

March 1, 2000

Mr. Robert Perciasepe
Assistant Administrator for Air and Radiation
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

BY FAX

Dear Mr. Perciasepe:

We are in receipt of your February 14th letter to California EPA Secretary Winston Hickox, in which you confirmed receipt on February 9th of "California's completed application for a waiver from the RFG program's oxygen requirement in the Clean Air Act." Your letter also states that, "In order to make this determination, the Agency must conduct an independent evaluation of the data and modeling as well as the other information submitted by the state in support of its request for a waiver from the federal RFG oxygen requirement. *We hope to complete our assessment by early summer* (emphasis added)."

This protracted timetable is not acceptable. California needs certainty on this issue now, and has more than adequately demonstrated as much. We are aware that California submitted a comprehensive waiver request to EPA on April 12, 1999, and that based on subsequent discussions with EPA staff, provided additional technical information on several occasions late last year and earlier this year. We are also aware that these more recent submissions have been tangential to EPA's continuing consideration of the underlying waiver request and should not warrant the additional and extravagant amount of time you suggest is required to "assess" them.

At the same time, we are aware that EPA is apparently pursuing two separate rulemakings on this issue, which are now pending at the Office of Management and Budget. The first of these would reportedly allow EPA to utilize the Toxic Substances Control Act (TSCA) to limit or eliminate use of MTBE as a fuel additive. The other, and far more mysterious proposal, would apparently allow for a "reformulated gasoline adjustment," which is widely rumored to consist of a carbon monoxide offset for ethanol.

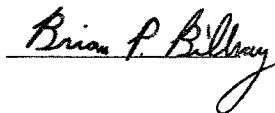
These two proposals—neither of which have been shared with the Commerce Committee, members of the California delegation, or the State of California—do not appear to be reflective of the strong scientific, content-neutral, and performance-based case California has made since 1996, and is pursuing via legislation and waiver request, for relief of the 2% oxygen requirement in order to best fulfill its clean air strategies and address its groundwater concerns. This case is further validated by the report of EPA's own prestigious Blue Ribbon Panel on Oxygenates in Gasoline, which was released on July 29, 1999, and contains this conclusion: "Within California,

lifting the oxygen requirement will result in greater flexibility to maintain and enhance emissions reductions, particularly as California pursues new formulation requirements for gasoline." We are dismayed at the evident lack of consideration of this well-documented science in EPA's pending proposals, and at EPA's lack of urgency regarding California's waiver request, which is evident in your letter of February 14.

While we recognize that the focus of this Thursday's Health and Environment Subcommittee hearing is on the national implementation of the RFG program, we nonetheless are confident that it will afford us an opportunity to hear from you on our serious aforementioned concerns and for you to help us to better understand EPA's reasoning and intent on this critical California public health issue.

Thank you for the attention you have paid to our concerns in the past. We look forward to working with you to expeditiously resolve the aforementioned issues concerning California's waiver request.

Sincerely,

A handwritten signature in dark ink, appearing to read "Michael Kenny", with a large, sweeping flourish extending to the right.A handwritten signature in dark ink, appearing to read "Brian P. Bliley", with a long, horizontal flourish extending to the right.

cc: The Honorable Tom Bliley
The Honorable John Dingell
The Honorable Michael Bilirakis
The Honorable Sherrod Brown
Mr. Winston Hickox, Secretary, California EPA
Mr. Michael Kenny, Executive Officer, California Air Resources Board

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 14 2000

OFFICE OF
AIR AND RADIATIONA-2000-10
II.C.-12

Honorable Winston H. Hickox
Secretary
California Environmental Protection Agency
2020 L Street
P.O. Box 2815
Sacramento, CA 95812

Dear Mr. Hickox:

I am writing to confirm receipt on February 9, 2000, of California's completed application for a waiver from the reformulated gasoline (RFG) program's oxygen requirement in the Clean Air Act. As you are aware, on January 24 and 25, 2000, Environmental Protection Agency (EPA) staff met with California Air Resources Board (CARB) staff to explore technical questions and issues concerning California's request for the waiver. Based on those discussions, CARB recently provided the additional information requested by EPA to complete its application.

As you know, under the Clean Air Act provisions, EPA may waive the oxygen mandate, in whole or in part, "...upon a determination by the Administrator that compliance with such requirement would prevent or interfere with the attainment by the area of a national primary ambient air quality standard [NAAQS]."

In order to make this determination, the Agency must conduct an independent evaluation of the data and modeling as well as the other information submitted by the state in support of its request for a waiver from the federal RFG oxygen requirement. We hope to complete our assessment by early summer. Based on our productive discussions with CARB up to this point, we fully expect that we will meet this schedule. If EPA determines that the statutory conditions to grant the waiver are met, we will then be required to provide public notice of our decision. Such procedures include a comment period of at minimum thirty days.

EPA understands California's desire for an expeditious resolution of this matter. To facilitate this process, we have been in close contact with CARB technical staff and we appreciate the cooperation we have received from CARB to date. We look forward to maintaining this cooperative relationship as we exchange information necessary to complete our evaluation.

We appreciate your willingness to continue working closely with us on this matter, and will keep you apprised of our progress.

Sincerely,



Robert Perciasepe
Assistant Administrator

cc: Michael Kenny, Executive Officer, CARB

California Environmental Protection Agency

Air Resources Board • Department of Pesticide Regulation • Department of Toxic Substances Control
Integrated Waste Management Board • Office of Environmental Health Hazard Assessment
State Water Resources Control Board • Regional Water Quality Control Boards

February 24, 2000

Mr. Bob Perciasepe
Assistant Administrator for Air and Radiation
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Perciasepe:

Thank you for your letter of February 14, 2000 acknowledging that California's application for a waiver of the federal Clean Air Act requirements that all gasoline sold in the Sacramento region and most of Southern California contain a minimum oxygen content is complete. I am, however, somewhat disappointed that the U.S. Environmental Protection Agency (U.S.EPA) believes it cannot complete the assessment of California's request before early summer. I am also hopeful that in working closely with us, U.S.EPA can accelerate that timetable.

As you know, in March 1999, Governor Davis signed an Executive Order to remove the fuel additive methyl tertiary butyl ether (MTBE) from California's gasoline supply because it poses an unacceptable risk to California's water resources. New gasoline regulations will end MTBE use in California no later than December 31, 2002 while preserving the significant air quality benefits we enjoy from our cleaner burning gasoline.

With the flexibility provided by a waiver, California refiners will have a choice of producing reformulated gasoline using ethanol or fuel without any oxygen at all. Refiners will be able to use the most economical mixture of gasoline blends and enable Californians to save hundreds of millions of dollars in fuel costs without sacrificing air quality.

To protect California's consumers, Governor Davis first wrote to Administrator Browner to request the waiver on April 12, 1999. A prompt response to our request to waive the federal oxygen content requirement is a very high priority for California. Refiners must decide now how to comply with the MTBE phase-out and will begin make investments in refinery modifications soon. They need to know whether they have the option to produce non-oxygenated gasoline.

The California Environmental Protection Agency and its Air Resources Board will continue to make available whatever resources are necessary to ensure quick processing of our request. I look forward to continuing to work with you on this important issue.

If you have any questions or concerns, please do not hesitate to contact me at 916/323-2514.

Sincerely,

Winston H. Hickox

Winston H. Hickox
Agency Secretary

ONE HUNDRED SIXTH CONGRESS

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U.S. House of Representatives
Committee on Commerce

Room 2125, Rayburn House Office Building
 Washington, D.C. 20515-6115
 March 28, 2000

The Honorable Carol M. Browner
 Administrator
 Environmental Protection Agency
 401 M Street, S.W.
 Washington, D.C. 20460

Dear Administrator Browner:

In the exercise of its oversight of environmental laws, including the Clean Air Act and the Safe Drinking Water Act, the Commerce Committee has demonstrated a longstanding interest in the Environmental Protection Agency's (EPA's) implementation of the federal reformulated gasoline (RFG) program and EPA's approved use of methyl tertiary butyl ether (MTBE) in federal RFG.

As you know, since April 1998, the Committee has held three hearings on issues involving RFG and made numerous written requests to your Agency concerning EPA's implementation of the RFG program and response to state and local efforts to address drinking water contaminated by MTBE. This effort has involved repeated inquiries concerning California's now 11 month-old request for administrative relief in the form of a waiver of the federal oxygenate requirement. In addition, the Committee has inquired as to both the ability of EPA to waive application of the oxygenate requirement under the Clean Air Act or other authority, as well as the ability of EPA, under current law, to eliminate or reduce the use of specific oxygenates, including MTBE.

To date, EPA's responses have been inadequate. EPA has taken no action on the California waiver request, despite nearly a year of consideration and despite having all relevant scientific and technical information. Neither has the EPA provided the Committee with requested information and testimony concerning differences in RFG implementation in various areas of the country, how the Agency defines and accounts for air quality benefits in states using RFG, and the extent of current statutory authority available to EPA to phase out or curtail the use of any specific oxygenate. This delay and miscarriage of duty is regrettable and is at cross purposes with the expectation held by the American people who depend on EPA to act on health and environmental issues.

After a considerable period of silence, EPA released this week a half-page long list of legislative "principles" related to the contamination of drinking water by MTBE in gasoline and proposing a national renewable fuels mandate. These principles are too vague to be meaningful to the legislative process. This letter seeks additional information so that the Committee might understand what legislative language EPA may be suggesting.

These principles do not indicate whether EPA believes MTBE use should be reduced or eliminated nationally, or in any particular area of the country. Moreover, while the Administration insists that the principles be "taken together as a single package," it provides no supporting technical background to any recommendation, or information on how the Administration defines such basic terms as the "air quality gains" of the RFG program. As such, the recommendations contribute nothing of substance to the legislative deliberations of this Committee or the Congress as a whole.

It is especially disturbing that these recommendations come against a background of EPA stonewalling concerning the most basic issues regarding the RFG program and legislative changes to the program. At the Committee's most recent hearing on the RFG program, which occurred on March 2, 2000, EPA Assistant Administrator for Air and Radiation, Robert Perciasepe, failed to provide testimony or answer several direct questions concerning the Administration's position on addressing problems in the RFG program. On March 2nd, Mr. Perciasepe could not or would not say whether EPA favored a legislative change to the 2% federal oxygenate requirement. At this time, he also did not describe the extent of EPA's ability, under other legal authority such as the Toxic Substances Control Act, to reduce or eliminate the use of MTBE. Additionally, Mr. Perciasepe could not or would not supply a specific date by which EPA would resolve the waiver request by the State of California. And despite the fact that several pieces of legislation have been introduced in Congress, Mr. Perciasepe did not indicate that the Administration supported any one piece of legislation, or any specific provision in any introduced bill. Accordingly, I must assume that EPA either developed all of the positions contained in the half-page of recommendations within the past three weeks, or consciously failed to provide requested information to the Committee.

I would note that EPA's "principles" come some eight months after the Blue Ribbon Panel Report on Oxygenates, which was released in July 1999. I find it incredible that it has taken eight months for EPA to respond to the report of a Blue Ribbon Commission it appointed (a report that covered 119 pages and included 16 specific recommendations). These principles represent the Administration's first indication of what it *may* support concerning legislative alterations to the existing reformulated gasoline program. I believe the lack of specificity in these principles is nothing short of astounding. For example, nowhere in EPA's press release materials is an estimate of how these recommendations will affect the price of either reformulated or conventional gasoline.

In order that the Committee might understand what legislative language EPA may be suggesting, I have enclosed a series of questions relating to EPA's principles. To ensure that the Committee may consider this matter with adequate time left in the legislative calendar, please provide to the Committee a written response to the enclosed questions by April 7, 2000. If you have any questions regarding this request, please contact Robert Meyers or Joseph Stanko. Committee counsel, at (202)225-2927.

Sincerely,


Tom Bliley
Chairman

Attachment

cc: The Honorable John D. Dingell
Ranking Member



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 06 2000

OFFICE OF
AIR AND RADIATION

The Honorable Thomas J. Bliley
United States House of Representatives
Washington, DC 20515

Dear Congressman Bliley:

Thank you for your letter of March 28, 2000, which posed a number of questions related to the Environmental Protection Agency's (EPA) reformulated gasoline (RFG) program. Please see the enclosed response to your questions.

I hope you will find this information useful. Please contact us if we can provide further assistance.

Sincerely,

Robert D. Berner (for)
Robert Perciasepe
Assistant Administrator

Enclosures

1. Please provide the Committee with a copy of all legislative language which the EPA has developed or considered which incorporate or effectuate the “principles” that were announced on March 20, 2000.

EPA has suggested changes to draft legislative language in response to requests for technical assistance from members of Congress. The Administration has not developed specific legislative language. We look forward to working with Congress to develop legislation encompassing the Administration’s principles.

2. EPA’s legislative principles of March 20, 2000, indicate that Congress should amend the Clean Air Act to provide authority to “significantly reduce or eliminate the use of MTBE.”

a. Does the Administration support eliminating the use of MTBE in gasoline? Please specifically indicate what scientific and technical information the Administration believes supports elimination of the use of MTBE in gasoline.

EPA’s current understanding of the scope and nature of the MTBE problem, and the possible solutions to the MTBE problem, is well characterized in the ANPRM issued by EPA on March 20, 2000 (enclosed as Attachment 1). The Agency’s position regarding the reduction or elimination of MTBE in gasoline is predicated in large part upon the findings of the Blue Ribbon Panel (Panel) as embodied in the Panel’s report (enclosed as Attachment 2), and upon the studies and supporting documentation relied upon by the Panel.

EPA has not yet reached a conclusion regarding what specific action would be the most appropriate regulatory response to the MTBE problem. In the recent ANPRM, EPA solicits comment on whether MTBE should be completely eliminated from gasoline, or, in the alternative, the level of MTBE in gasoline should be significantly reduced. Similarly, EPA solicits comment on whether a limitation or reduction in the level of MTBE in gasoline should occur immediately or over a period of time. If a reduction in the level of MTBE in gasoline (rather than an elimination) turns out to be appropriate (e.g., based on the behavior of MTBE in the environment and expectation of future leaks and spills), it would appear reasonable to use the level of MTBE in gasoline prior to the beginning of the RFG program as a starting point for such a limitation. Likewise, if a gradual (rather than an immediate) reduction or elimination of MTBE in gasoline turns out to be appropriate (e.g., because of limitations related to refinery reconfiguration, distribution capacity and/or the availability of alternative additives), we would consider the Blue Ribbon Panel’s recommendations to EPA to allow a period of up to 4 years.

b. If the Administration supports elimination of the use of MTBE in gasoline, over what period of time does the Administration support elimination? When would the Administration propose that all use of MTBE in gasoline in any area of the country, be

eliminated?

See answer to 2(a).

c. If the Administration does not support eliminating the use of MTBE in gasoline, does the Administration support action to "significantly reduce" the use of MTBE? If so, what does EPA consider to constitute a "significant reduction?" Is a "significant reduction" equivalent to a 50% reduction in current usage levels? A 75% reduction? A 90% reduction? Please specifically indicate what scientific studies and technical information support the level of reduction that the Administration supports.

See answer to 2(a).

d. If the Administration supports only reducing the use of MTBE in gasoline over time what time frame would the Administration propose achieving its recommended level of reduction?

See answer to 2(a).

3. EPA's legislative principles of March 20, 2000, indicate that the Blue Ribbon Commission recommended that Congress remove the 2% federal oxygenate requirement last July. Yet as recently as two weeks ago, EPA refused to indicate whether it supported this initiative. In specific, on March 2, 2000, EPA Assistant Administrator for Air and Radiation, Robert Perciasepe, was asked during a hearing of the Health and Environment Subcommittee, "Does EPA agree that the Clean Air Act should be amended to remove the requirement that the Federal reformulated gasoline contain 2 percent oxygenate?" Assistant Administrator Perciasepe responded by stating that "This issue is being looked at across the administration. The issue that the Chairman brought up and that you are asking now is, do we have specific administration recommendations to the Congress on this? And I am going to take that take the Chairman's request back to the administration and we will work on that..." In continuing his response to the question, Assistant Administrator Perciasepe later referred to himself as "a practical person without any administration position to carry in a briefcase here today..."

a. Why did it take the Administration eight months to decide whether or not it agreed with the recommendations of the Blue Ribbon Panel report to "to remove the current 2% oxygenate requirement from the Clean Air Act?" Please describe in detail and provide a

copy of any further analysis the Administration completed with respect to the Blue Ribbon Panel report, including but not limited to any further analysis of the 2% federal oxygenate requirement.

On July 27, 1999, the day the Blue Ribbon Panel announced its findings and recommendations regarding the use of oxygenates in gasoline, EPA Administrator Carol Browner issued a public statement on behalf of the Agency which stated:

"The recommendations I am receiving from the Panel confirm EPA's belief that we must begin to significantly reduce the use of MTBE in gasoline as quickly as possible without sacrificing the gains we've made in achieving cleaner air. EPA is committed to working with Congress to provide a targeted legislative solution that maintains our air quality gains and allows for the reduction of MTBE, while preserving the important role of renewable fuels like ethanol."

The Agency has supported and continues to support the findings and recommendations of the Panel. Attached is a copy of the Administrator's July 26, 1999 press statement that supports the recommendations and encourages working with Congress to find a targeted legislative solution to the problem (enclosed as Attachment 3).

b. Since Assistant Administrator Perciasepe indicated that the administration would be working in the period following March 2, 2000 to develop a position with respect to the 2% federal oxygenate requirement, please indicate all meetings that EPA held with respect to any manner relating to this requirement. Please indicate the dates of all such meetings, who attended such meetings (whether from EPA or any other federal agency or any other private person or private sector organization). Please also provide the Committee with any written work product in electronic format, that was completed or considered by EPA in the period March 2, 2000 to March 20, 2000 with respect to the 2% oxygenate requirement.

Below is a complete list of all meetings (not including routine telephone conversations or exchanges of e-mail) held by EPA with persons outside of EPA with respect to any matter related to developing a position on the 2% oxygen requirement:

- The Office of Management and Budget convened a meeting on March 3, 2000 to discuss wording for legislative principles. In attendance were representatives from Office of Management and Budget, EPA, Department of Agriculture, Department of Transportation, Department of Energy, Council on Environmental Quality, Department of Treasury, Office of Science Technology and Policy, and the Council of Economic Advisors.

Additionally, we have attached all written materials generated by EPA, or provided to EPA for review, in the period following March 2 that relate to developing a position with respect to the 2% oxygen requirement (enclosed as Attachment 4).

Several documents related to the development of the Administration's legislative principles are not being provided at this time. These documents, which contain draft language for the legislative principles and related communications between White House offices, the EPA and other administrative agencies, are being reviewed by White House Counsel.

4. EPA's legislative principles indicate that as MTBE is reduced or eliminated, "air quality gains" should be maintained.

- a) Please specify, by specific pollutant, which "air quality gains" must be preserved under the Administration's proposal.**

The Administration was, in general, referring to a class of air pollutants known as "toxics." Specifically, "toxics" refer to benzene, 1,3 butadiene, formaldehyde, acetaldehyde, and polycyclic organic matter (POM).

- (b) Please identify all available data bases which would act to measure each of the air quality gains identified in answer to question 4(a).**

Summarized in the Blue Ribbon Panel report, air quality gains were measured through the use of Refinery Reporting Data from 1995 - 1998 and RFG Survey Association Data for 1998. The reporting data represents the universe of RFG producers or importers and the RFG survey data are derived from a carefully planned statistical sampling of retail stations in various RFG cities. The actual fuel data was run through EPA's Complex Model to estimate the emissions benefits of the fuels.

- (c) Please indicate how the relative health effect of each pollutant identified in 3(a) above will be balanced against the relative health effects of all other pollutants identified in 3(a) above.**

With regard to the list of toxics in 3(a), our current knowledge of health effects associated with exposure to air toxics point toward benzene, and to a lesser extent, 1,3 butadiene, as the toxics of greatest concern to human health. Only benzene, however, can be controlled through direct fuel specification. The current requirements under RFG Phase II combine a requirement to limit the fuel's benzene content to no greater than 1% by volume, and a performance standard that requires a 22% reduction in total toxics emissions, including benzene, to insure that exposure to the toxics of greatest health concern are controlled adequately.

- (d) Does the Administration believe that "air quality gains" that should be maintained are the "air quality gains" that have been achieved under Phase I of the program? Or does the Administration believe that the "air quality gains" that should be**

“maintained” include projections of future air quality gains under Phase II of the RFG program?

The Administration believes that the air quality gains anticipated under Phase II of the RFG program should be maintained. Phase II RFG, which took effect on January 1, 2000, requires additional emission reductions, beyond those required in Phase I. For both air toxics and benzene, however, the Phase II requirements, unless changed, would allow for the formulation of RFG that does not maintain the benefits seen in 1998. These extra benefits in RFG for 1998, due, in large part to the addition of oxygenates, and in part to refiners' normal operating practice of doing better than the standard to assure an adequate compliance margin, resulted in a lower average benzene content (0.7% by volume rather than the required maximum of 1% by volume), and greater actual toxics performance reduction (27 percent versus a 22 percent requirement in Phase II). The Administration believes that the most effective way to ensure that these additional air toxics benefits, resulting from the presence of added oxygen, are preserved is to pass legislation consistent with the Administration's legislative principles.

5) The Blue Ribbon Panel report specifically recommended “action by EPA to ensure that there is no loss of current air quality benefits.” The report further indicated that EPA had available to it several possible mechanisms to accomplish this goal.

(a) Since EPA's March 20, 2000 principles indicate that “Congress . . . institute measures that maintain our air quality benefits,” is it the position of your Agency that the EPA cannot act to preserve such benefits absent new statutory authority?

EPA does have certain authority to address the emission of toxic air pollutants. Whether EPA can act to prescribe additional controls on such emissions under any particular set of circumstances depends on whether EPA can meet the requirements of the applicable statutory provisions. EPA believes that the most appropriate and expeditious approach would be to include any provision(s) to prevent degradation of air quality as an integrated component of legislation addressing MTBE and the 2% oxygen requirement.

(b) If you answer to 5(a) above is “no,” what current statutory authority is available to the EPA to maintain air quality benefits.

Section 211(k)(1) of the Clean Air Act directs EPA to establish regulations requiring the greatest reduction in emissions of ozone forming VOCs and toxic air pollutants achievable considering cost, air quality and non-air quality health and environmental impacts and energy requirements. EPA requires such reductions through performance standards under section 211(k)(3)(B). EPA has not previously changed the toxics performance standard under this section.

Section 202(l)(2) of the Clean Air Act directs EPA to establish regulations containing reasonable requirements to control hazardous air pollutants from motor vehicles and motor vehicle fuels that reflect the greatest degree of emission reduction achievable through available technology

considering cost, noise, energy, safety factors, and lead time. EPA currently is developing regulations to fulfill the Agency's obligations under this provision.

(c) If your answer to 5(a) above is "no," what specific action has EPA taken since receiving the Blue Ribbon Panel recommendations in July 1999 to analyze or propose how the Agency can maintain air quality benefits under present statutory authority should other action be taken administratively or legislatively to waive the 2% federal oxygenate standard?

EPA consistently has maintained that any action addressing MTBE and the 2% oxygenate requirement also must preserve the air quality benefits of the RFG program, and discussions of this issue have remained an integral component of our internal considerations. It is currently unclear, however, what form an action directed at MTBE issues ultimately might take; this fact makes it difficult for EPA to develop a meaningful, formal analysis of possible administrative actions to preserve the air quality benefits of the RFG program. EPA believes that action addressing the 2% oxygenate requirement and action to preserve RFG's air quality benefits should be a part of a single legislative package addressing issues related to MTBE as proposed in the Administration's legislative principles.

6. The Blue Ribbon Panel report also specifically recommended that "EPA and others should accelerate ongoing research efforts into inhalation and ingestion health effects, air emissions transformation byproducts and environmental behavior of all oxygenates and other components likely to increase in the absence of MTBE."

a) Please describe what specific actions, and what additional financial and staff resources the EPA has specifically allocated to accelerating research efforts concerning the inhalation and ingestion health effects of all oxygenates and other components as referenced above between July 1999 and March 20, 2000.

As the result of a notification to fuel and fuel additive manufacturers in November 1998, EPA currently is requiring that the manufacturers conduct a \$15 million research program to improve our understanding of the comparative health risks associated with inhalation exposures to conventional gasoline and gasoline containing oxygenates, including MTBE replacements, such as ethanol.

Additionally, EPA's Office of Research and Development (ORD) recently has completed a two-year \$300,000 human pharmacokinetics research effort that will aid in developing an ingestion cancer risk assessment for MTBE. Part of this effort, a workshop in late-May 2000, sponsored by EPA, included MTBE experts from EPA, industry, and other organizations and provided input to ORD regarding strategies for quantitative MTBE ingestion cancer risk development.

b) Please describe what specific actions, and what additional financial and staff resources the EPA has specifically allocated to accelerating research efforts

concerning the air emissions transformation byproducts of all oxygenates and other components as referenced above between July 1999 and March 20, 2000.

As a part of industry's \$15 million research program mentioned in 6(a), EPA currently is reviewing research protocols for human exposure studies that will focus on quantifying the levels of motor vehicle-related air pollutants to which people are exposed under varying micro-environmental, climate, and oxygenate usage scenarios. Combustion and photochemical transformation byproducts, such as aldehydes, tertiary butyl formate (TBF), and peroxyacetyl nitrate (PAN), that result, in part, from use of oxygenates are included in these studies.

- c) **Please describe what specific actions, and what additional financial and staff resources the EPA has specifically allocated to accelerating research efforts concerning the environmental behavior of all oxygenates and other components as referenced above between July 1999 and March 20, 2000.**

For both FY 2000 and FY 2001, EPA will spend about \$1.1 million for research related to environmental behavior of MTBE as part of development and evaluation of cost effective methods for removal of MTBE from drinking water supplies and mitigation of MTBE contamination in ground water. These activities include monitoring of natural attenuation of MTBE under varying hydrogeological conditions in order to determine conditions conducive to degradation of MTBE in groundwater.

Additionally, after more than a year of site development and proposal solicitation and review, EPA soon will be conducting a \$1.0 million MTBE field demonstration project to conduct performance evaluations on field-ready innovative technologies/processes for drinking water treatment and for source area remediation from MTBE contamination.

7. The Blue Ribbon Panel report also made several specific recommendations for "evaluating and learning from experience." These recommendations included such matters as conducting a full, multimedia assessment of any major new additive to gasoline and establishing routine and statistically valid methods for assessing the actual composition of RFG. Please describe all efforts by EPA since July, 1999 to implement these recommendations. In any instance where EPA believes a recommendation is currently not applicable, please indicate when the EPA would believe such a recommendation would be applicable and what plans EPA has developed to implement such a recommendation in the future.

Section 211 of the 1990 Clean Air Act Amendments (CAA) require a manufacturer to register any new fuel or fuel additive with EPA before that fuel or fuel additive may be considered for commercial use. Further, section 211(b) of the CAA allows the Agency to require health effects testing to assess the potential air-related impacts and risk to public health for any new fuel or fuel additive to gasoline. However, the CAA does not currently contain provisions for the Agency to require health effects testing, limit, or eliminate the use of a fuel or fuel additive, whether new or

already in use in gasoline, based on its potential risk to public health through water contamination.

Section 4 of the Toxic Substances Control Act (TSCA) does allow EPA to require that chemical manufacturers take a multimedia approach in obtaining health effects testing data for chemicals that are already in production and commercial use. In the case of MTBE, utilization of section 4 of TSCA helped secure, by 1992, over \$4 million worth of inhalation health effects testing data under an enforceable consent agreement with industry. However, had EPA predicted that MTBE would present such a widespread ground and surface water problem, an effort to obtain water-related health effects testing would have been justified.

Recently, EPA published an advanced notice of proposed rulemaking, under section 6 of TSCA, to allow the Agency to reduce or ban MTBE, on the grounds that the chemical presents an unacceptable risk to public health and environmental welfare.

Section 211(b) of the 1990 Clean Air Act Amendments (CAA) requires a manufacturer to register any new fuel or fuel additive with EPA before that fuel or fuel additive may be considered for commercial use. Further, any dramatic increase in volume of any fuel or fuel additive that is currently in use in gasoline must be reported to EPA through quarterly reports currently received from domestic refiners and importers.

This provides EPA with the opportunity to scrutinize new gasoline additives, or existing additives that are used in substantially greater quantity. Through section 211(b) of CAA, or section 4 of TSCA, EPA then may require any health effects testing and environmental behavior research necessary to adequately assess the potential adverse impact and risk to public health for any such fuel or fuel additive. For example, EPA regulations under 40 CFR Part 79 detail the registration and testing requirements for fuels and fuel additives. Because the regulatory framework already exists for thoroughly evaluating new fuel additives, EPA has not yet taken further action to implement the Panel recommendations in this regard. As is its routine procedure, when new fuel additives are presented to EPA for approval, the agency will fully consider the health and environmental implications of approving such additives for use.

8. The Blue Ribbon Panel report also recommends that Congress act to “clarify federal and state authority to regulate and or eliminate the use of gasoline additives that pose a threat to drinking water supplies.” Your March 20, 2000, principles indicate that Congress should amend the Clean Air Act to provide the authority to significantly reduce or eliminate the use

of MTBE. However, your principles are unspecific as to whether Congress should authorize EPA, the states or some other governmental or regulatory body in this regard.

(a) Does EPA recommend that Congress give authority only to EPA to significantly reduced or eliminate the use of MTBE?

In order to avoid potential price volatility and problems with fuel availability, EPA believes that any Congressional action regarding the reduction or elimination of MTBE as a fuel additive should be tailored to avoid the creation of a national "patchwork" of fuel requirements. We look forward to working with Congress to develop legislation consistent with the Administration's legislative principles.

(b) What authority, if any, does EPA believe Congress should grant to individual states or other governmental or regulatory bodies to reduce or eliminate the use of MTBE?

See response to question 8(a).

(c) Does EPA recommend that any grant of authority which Congress gives to EPA, states, or any other governmental or regulatory body be specific as to MTBE? If not, please describe what other gasoline additives that EPA considers the Agency or any state or other governmental or regulatory body lacks necessary authority to significantly reduce or eliminate.

A grant of authority to EPA to significantly reduce or eliminate MTBE in gasoline may appropriately target MTBE specifically, or may provide broader authority for EPA to control gasoline additives generally for purposes other than air quality (e.g., to prevent contamination of soil and groundwater). We look forward to working with Congress to develop legislation consistent with the Administration's legislative principles.

9. Your legislative principles also recommend that the existing oxygenate requirement be replaced with a renewable fuel standard for all gasoline.

a. Since oxygenates are required for only reformulated gasoline, which is approximately 30% of the nation's gasoline market, why did the Administration propose that this requirement be replaced with a requirement applicable to all gasoline sold in the United States?

First, it is important to clarify that the Administration's legislative principles include a renewable requirement that would not necessarily mean that all gasoline sold in the United States would contain renewables, but rather that some percent of each gallon of the total gasoline volume would, on average, contain a renewable fuel. This is intended to give refiners more flexibility in meeting the renewable standard.

b. By what date does the Administration propose that all gasoline contain ethanol or other renewable fuel?

The Administration wants to work with Congress on the specifics of the renewable standard. One approach would be to include an increasing level of renewable fuel that would correspond to a decreasing level of MTBE. Again, it is important to clarify that the renewable requirement would not mean that each gallon of gasoline sold in the United States would contain renewables, but would mean that some percent of each gallon of the total gasoline volume sold would, on average, contain a renewable fuel.

c. What percentage of all gasoline will be required to be from renewable sources under the Administration's proposal?

As set out in the legislative principles, the Administration believes that renewable fuel content currently comprises about 1.2 percent by volume of gasoline when averaged across the nation's fuel supply. The Administration has further recommended that any legislation allow for sustained growth over the next decade. It would be reasonable, however, to provide for a gradual increase in renewable fuel content as use of MTBE is phased down or eliminated. We look forward to working with Congress to develop legislation that achieves this goal.

d. What is the basis for EPA's conclusion that the current level of renewable fuel is 1.2% of the nation's gasoline supply? Is that figure measured by weight, or volume or some other metric? Is this Administration aware of any differing estimates, or other studies or reports that are in agreement or disagreement with this figure?

Total motor gasoline demand in 1999 was 8.4175 million barrels per day or 129 billion gallons per year (EIA/Short-Term Energy Outlook, April 2000, Table 5, page 35). Total ethanol production for 1999 was 1.5 billion gallons (EIA/Petroleum Supply Monthly). Therefore, ethanol production accounted for 1.2 percent of total motor gasoline.

e. Please define what level of renewable fuel "allows for sustained growth over the next decade." How does the Administration's propose to legislatively mandate or provide for such growth?

Allowing for sustained growth anticipates an increasing level of renewable fuel use. The Administration has not developed a specific rate of increase or a required level of renewable fuel. We want to work with Congress to establish the growth rate.

EPA collects information on the composition of all gasoline produced or imported into the United States. This information is collected under the reformulated gasoline (RFG) program and the conventional gasoline (CG) antidumping program (which prevents refiners from dumping the dirty

gasoline components from RFG into CG). This information is submitted to the Agency on a refiner, importer, and facility basis. Thus, if a renewable fuels standard were implemented either on a gasoline production or importation company basis or on the basis of an individual gasoline production or importation facility, accounting methods are already in place to assure that the requisite amount of renewable fuels would be used. There would have to be some important changes to the reporting system, however, to allow for reporting, including averaging and trading of fuels, that specifically meet the renewable fuels requirements. Additional reporting from oxygenate blending facilities might be needed, depending on the compliance structure of the program.

f. What is the projected price impact, on a gallon of conventional gasoline of the Administration's proposal that such gasoline contain renewable fuels? Please provide projections as to the added price impact of this requirement for a gallon of conventional gasoline in March, 2001.

The Administration currently is developing an analytical study of the economic effects of addressing the MTBE problem.

g. Please provide a copy of all studies, reports and analysis which the Administration relied on in developing its March 20, 2000 legislative proposal for a new renewable fuels requirement for conventional gasoline and reformulated gasoline. Please provide a copy of any specific cost/benefit analysis which has been completed with respect to this requirement.

Although we still are working on an economic analysis study for a new renewable fuels standard, USDA has some analytical work that it did in response to work requested by Senator Daschle (enclosed as Attachments 5-7). While strictly illustrative of many possible renewable fuel standards, the analysis helps gauge how an MTBE phase out with a renewable fuels standard would affect agriculture, compared with an MTBE phase out and the oxygenate requirement remaining in place.

The renewable fuels standard examined assumed fuels produced from renewable sources account for 1 percent of the nation's gasoline in 2001 and increase linearly to 2.5 percent in 2010. The analysis was limited to the gasoline market and the effects on the farm economy of the increased production of ethanol from corn. The amount of ethanol used in any year is therefore a fixed, assumed percentage of total projected gasoline use with no adjustment for other factors which could affect ethanol use. Ethanol production from biomass likely would be small initially, but was assumed to increase over time with advances in cost-saving technology, providing added farm sector benefits.

USDA's illustrative analysis of a renewable fuels standard indicates that a standard can provide significant economic benefits to U.S. farmers by increasing the demand for corn used in ethanol and investment in corn-ethanol production facilities. With 2.5 percent of the nation's gasoline

comprised of ethanol by 2010, U.S. corn ethanol production would increase from a baseline projection of 1.7 billion gallons in 2010 to 3 billion gallons. The price of corn was projected to be over 15 cents per bushel higher in 2010 and average 11 cents per bushel higher during 2002-2010 than in the absence of the fuels standard. With higher corn prices and greater corn production, U.S. net farm income was projected to increase by \$1.4 billion in 2010, and average \$750 million higher per year during 2002-2010.

These results indicate that the same or greater general types and magnitudes of economic benefits to agriculture and rural areas would result from a properly specified renewable fuels standard in place of the existing oxygenate requirement.

10. As you know, despite repeated requests, the Administration has refused to indicate whether or not it will grant a waiver of the 2% federal oxygenate requirement in the State of California, despite having received a petition requesting such a waiver on April 12, 1999.

a. Since the Administration is recommending that the Clean Air Act be amended to “replace” the 2% federal oxygenate requirement with a new renewable fuels standard, does this indicate that the Administration does not believe it has the authority to waive the application of the 2% federal oxygenate requirement in California? If not, please indicate if the Administration is proposing that California be subject to a renewable fuels requirement even if the Administration acts to grant its April 12, 1999 waiver request.

The Administration’s announcement of legislative principles regarding MTBE, the oxygen content standard and the use of renewable fuels was not dependant on EPA’s decision on California’s request for waiver of RFG oxygen mandate. Whether EPA grants California’s request for waiver of the oxygenate requirement depends on the application of the criteria set forth in Section 211(k)(2)(B) of the Clean Air Act. This provision states that EPA may waive the oxygenate requirement “in whole or in part . . . for any ozone nonattainment area upon a determination by the Administrator that compliance with such requirement would prevent or interfere with the attainment by the area of a national primary ambient air quality standard.” We currently are in the process of evaluating California’s submission to determine whether this criteria has been satisfied. We cannot say at this time whether it would be appropriate for California to be subject to a renewable fuels requirement were the Administration’s legislative principles to be adopted and implemented and were EPA to determine that California’s waiver request should be granted.

b. In a February 29, 2000 letter from Assistant Administrator Perciasepe to Chairman Michael Bilirakis, it is stated that the “Agency must conduct an independent evaluation of the data and modeling (submitted by California).”

i. Please indicate who is conducting this “independent analysis.”

The independent evaluation of California Air Resources Board’s (CARB’s) data and modeling relating to California’s request for a waiver, is being conducted by the USEPA, Office of Transportation and Air Quality, with support in statistical analyses from Southwest Research Institute.

ii. Please indicate the date on which this independent evaluation began, what issues and data are being considered in this independent evaluation, and when EPA projects work concerning each issue or data being considered will be completed.

The independent evaluation began immediately after the State’s submittal of the necessary analytical documentation in February 2000. The evaluation will carefully examine the emissions modeling and the underlying statistical analysis upon which California bases its conclusion that the 2% oxygen content standard prevents or interferes with the State’s ability to achieve the NAAQS. This will include a comparative evaluation of California’s “Predictive Model” and EPA’s “Complex Model,” an analysis of the relationship between the oxygen content of California fuels and NOx emissions, and consideration of other factors that contribute to the overall emissions performance of California fuels. Each of these analyses is complex, and all are interrelated. We expect to complete our evaluation of California’s waiver request by early summer.

iii. If individuals that are not EPA employees are involved in the independent evaluation of the California waiver request, please provide a list of all individuals involved in this evaluation, their professional affiliations or employers, and what expertise each individual has with respect to issues or data under review in the California request.

Individuals other than EPA employees involved in the independent evaluation of the waiver request are staff from Southwest Research Institute. These staff have expertise in statistical analysis.

11. Materials that were distributed as part of your March 20, 2000 press conference to announce EPA’s legislative principles” state that, “Upon release of the (Blue Ribbon) Panel’s report in September 1999, EPA immediately began working with and encouraging Congress to pass legislation that responded to the Panel’s recommendations.” As noted above, on March 2, 2000, Assistant Administrator Perciasepe could not or would not respond to a direct question as to whether the Administration supported, or did not support, elimination of the 2% federal oxygenate requirement. Moreover, until March 20, 2000, the Committee is unaware of any effort by EPA to “work with” or “encourage” the Commerce Committee, which has jurisdiction over the Clean Air Act, to take any specific action with respect to MTBE or the RFG program generally. In addition, I am unaware of any legislation, or legislative proposal which the Administration supported prior to the March 20, 2000 press announcement of EPA’s legislative “principles.”

a. Please define what actions you believe that EPA took between September 1999 and March 20, 2000 to “work with” Congress on legislation that responded to the Blue Ribbon Panel’s recommendations. Please provide the date on which each action took place.

Between September 1999 and March 20, 2000, in addition to phone conversations, EPA staff met with Senator Daschle’s staff on four occasions to discuss and provide technical assistance in Senator Daschle’s efforts to draft legislation related to MTBE and the Clean Air Act oxygen content requirement. These meetings occurred on the following dates: September 1, 1999; October 5, 1999; October 28, 1999; and February 18, 2000. In addition to working with Senator Daschle’s staff, EPA staff provided technical assistance, upon request, related to proposed legislation addressing MTBE within the delineated time period for two other senators.

b. Please indicate what specific legislation that EPA “encouraged” Congress to approve prior to March 20, 2000.

EPA did not encourage the passage of any specific legislation. In conversations and meetings, EPA simply encouraged the development and approval of legislation that would provide a solution to the problems existing as a result of the use of MTBE in gasoline.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 8 2000

OFFICE OF
AIR AND RADIATION

The Honorable Gene Green
United States House of Representatives
Washington, DC 20515

Dear Congressman Green:

Thank you for your letter of March 8, 2000 which outlined your remaining questions from the March 2nd hearing before the Subcommittee on Health and Environment on the Environmental Protection Agency's (EPA) reformulated gasoline (RFG) program. I apologize for the delay in this response. We were anticipating receipt of a broader list of questions from the full subcommittee. In the absence of that list, I would like to answer your questions individually. Please see the enclosed response to your questions.

I hope this information is useful. Please contact us if we can provide further assistance.

Sincerely,

A handwritten signature in black ink that reads "Bob Perciasepe".

Robert Perciasepe
Assistant Administrator

Enclosure

**Questions from the March 2, 2000 House MTBE Hearing
Submitted by Congressman Gene Green**

1. Relaxation of RFG Phase II Standards

I understand that EPA is getting ready to propose a regulation that would relax the standards for Phase II of RFG. Supposedly, EPA is planning to increase the limits on VOC emissions, and allow refiners to take credit for certain carbon monoxide reductions. Why is this relaxation necessary? It is my understanding that this proposal could result in not only more emissions of VOCs, but also more emissions of toxic air pollutants. Is this correct? Can you assure me that this regulation, if it is issued, will not allow "backsliding" on any of the environmental standards of the RFG program?

There has been no determination made as to whether the draft language to which you refer will be proposed. As currently written, it would provide an adjustment to the VOC performance standard for Phase II RFG that contains 10 volume percent ethanol. The draft language would thereby implement the National Research Council (NRC) recommendation that "the contribution of CO to ozone formation should be recognized in assessments of the effects of RFG." Ethanol blended at 10 volume percent (or 3.5 weight percent oxygen) would achieve significant reductions in CO emissions, because the amount of CO reduction increases as oxygen increases. As recognized by the NRC, CO contributes to ozone formation and is present in ambient concentrations due in part to the large volume of CO emissions from mobile sources. The relatively large decrease in CO emissions will offset some, if not all, of any potential increase in ozone formation due to the relatively small increase in VOC emissions associated with the proposed rule. We believe that the adjusted standard will assure that the Phase II RFG program will continue to achieve the significant environmental benefits for which it was designed.

The proposed rule would also represent an important step toward implementing the recommendations of the Blue Ribbon Panel on Oxygenate Use. One of the panel's recommendations was that EPA should take steps to reduce the amount of MTBE used in gasoline. Accordingly, this proposed action would provide additional flexibility for refiners by improving the economic viability of ethanol, the primary oxygenate available as an alternative to MTBE.

Regarding the effect on air toxics, we are not proposing to adjust the air toxics performance standard. Thus, refiners must meet that standard in all cases. We believe that the proposed VOC adjustment could have an effect on air toxics benefits that are currently in excess of compliance levels in areas that currently do not use ethanol RFG; however, we believe the loss, if any, would be moderate.

**2. How much did EPA know about MTBE before it came to be used in RFG in 1995?
What scientific studies were conducted by the agency and by the MTBE industry?**

MTBE has been in use in gasoline since 1979. Initially, MTBE was found to be a suitable octane enhancer as lead in gasoline was phased-out. In 1986, as MTBE use in fuels increased, EPA drafted a research plan to obtain a broader set of health effects testing information, even though no adverse health effects associated with MTBE had been found to that point.

In 1987, formal recommendations were made under section 4(a)(1)(B) of the Toxic Substances Control Act (TSCA) for certain testing to be performed to determine whether inhalation of MTBE posed a threat to health. Specifically, it was recommended that animal testing be conducted on MTBE to evaluate the potential for neurotoxic, reproductive/developmental, oncogenic, and other effects.

EPA entered into an enforceable consent agreement (ECA) with the manufacturers of MTBE in March of 1988 in which the manufacturers agreed to fund specified toxicity testing on MTBE. The ECA was used as an alternative to a test rule and thus enabled the testing to begin more quickly than would have been possible with a rulemaking.

Thus, prior to MTBE's use in the reformulated gasoline (RFG) program in 1995, and in the Winter Oxygenated fuels program in 1992, industry conducted extensive research on MTBE between 1988 and 1992 at a resulting cost of about \$4.1 million.

Reports of acute health symptoms arising after the introduction of oxygenated gasoline prompted EPA's Office of Research and Development (ORD) to convene a planning workshop in early January, 1993, that led to several important studies being conducted by EPA, Centers for Disease Control, academia, and other organizations in a highly expedited manner during the first few months of 1993.

These studies included epidemiologic investigations in various communities, experimental inhalation chamber studies of human volunteers and of laboratory animals, personal exposure measurements, and characterizations of vehicle emissions under cold temperature conditions. Results of these and other studies were presented at the "Conference on MTBE and Other Oxygenates: A Research Update", July 26-28, 1993 (EPA report no. EPA/600/R-95/134, 1995), with many key studies later published in the peer-reviewed literature.

In November 1993, EPA's Office of Research and Development issued an "Assessment of Potential Health Risks of Gasoline Oxygenated with MTBE" (EPA report no. 600/R-93/206, 1993), which concluded that, "There is unlikely to be a substantial risk of acute health symptoms among healthy members of the public receiving typical environmental exposures under temperate conditions (i.e., not subarctic temperatures)."

In December 1994, ORD updated its assessment ("Health Risk Perspectives on Fuel Oxygenates," EPA report no. 600/R-94/217, 1994), concluding that, "With the currently available information, there is no basis to expect that the use of MTBE oxygenated gasoline or MTBE reformulated gasoline will pose a greater public health risk than traditional gasoline."

3. What research is EPA currently doing itself - or paying others to do -- on the possible adverse health effects of MTBE? Are these ingestion (drinking water) studies or inhalation studies? When will the results of these studies be available? Why are you doing these studies?

In November, 1998, EPA notified a consortium of fuel and fuel additive manufacturers of further inhalation health effects testing requirements under authority of section 211(b) of the Clean Air Act. Results from these animal toxicity and human exposure studies of conventional gasoline and several oxygenated fuels, particularly MTBE-oxygenated gasoline, at an estimated cost of about \$15 million, will become available in varying intervals over the next three years.

With regard to ingestion studies, EPA's Office of Research and Development has recently completed a two-year \$300K human pharmacokinetics research effort that will aid in developing an ingestion cancer risk assessment for MTBE. And, as part of this effort, a workshop on May 24-25, 2000, sponsored by EPA, included MTBE experts from EPA, industry, and other organizations to provide input to ORD on strategies for quantitative MTBE ingestion cancer risk development.

These studies were developed, in part, as a response to research needs identified during the drafting process of a report entitled "Oxygenates in Water: Critical Information and Research Needs" finalized in December, 1998. This document identified EPA's current understanding of, and the respective water-related research needs for, oxygenates, like MTBE, in the areas of source characterization, transport, transformation, environmental occurrence, health effects, exposure, aquatic toxicity, release prevention, and contaminant removal.

The need for ingestion health effects data for MTBE was also identified in the Blue Ribbon Panel report "Achieving Clean Air and Clean Water" published in September, 1999.

4. Setting a drinking water standard for MTBE

Mr. Perciasepe, your colleague at EPA, Cynthia Dougherty, who heads the EPA office of drinking water, said that EPA intends to issue a "secondary" (taste and odor) standard for MTBE in drinking water. That standard would essentially codify EPA's 1997 "advisory" on MTBE in drinking water. That advisory recommends water treatment utilities keep MTBE levels in drinking water between 20 and 40 parts per billion to ensure that the water doesn't taste bad or smell bad. The advisory also says that this level will provide "a large margin of exposure (safety) from toxic effects. Mr. Perciasepe, you were the head of EPA's water office when this health advisory was issued. Do you agree with its findings that the level 20 to 40 parts per billion provides significant protection from possible adverse health effects from MTBE?

Since there are no studies of the effects on humans of long-term exposure to MTBE, there is no certainty as to what constitutes "significant protection." The studies that are available for hazard assessment are laboratory animal studies. The Advisory published in 1997 was based on inhalation research results available at that time. EPA is in the process of updating the Advisory and preparing a secondary standard for drinking water. These actions will take into account any new information on taste and odor as well as recent data on the pharmacokinetics of MTBE.



Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
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Gray Davis
Governor

April 14, 2000

The Honorable Henry A. Waxman
United States House of Representative
29th District, California
2204 Rayburn House Office Building
Washington, D.C. 20515-0529

Dear Representative Waxman:

Thank you for your recent letter regarding Dr. Michael Graboski's March 2, 2000, testimony before the Subcommittee on Health and Environment of the House Commerce Committee. I am pleased to reply to your request to respond to his testimony.

According to Dr. Graboski's testimony, he states that California's recently-approved California Phase 3 reformulated gasoline (CaRFG3) regulations could allow backsliding on previously-achieved air quality benefits. Specifically, Dr. Graboski argued that the CaRFG3 rule would allow an increase in toxics because of the increase in the 90 percent distillation temperature (T90) specification. He also states that the air quality benefits of California Phase 2 Reformulated Gasoline (CaRFG2) would be diminished by the increased flexibility with regard to evaporative emissions provided by the CaRFG3 regulations. Dr. Graboski expressed a similar opinion at the Air Resources Board (ARB) hearing to consider the CaRFG3 Regulations on December 9, 1999.

The California Clean Air Act of 1988 requires the ARB to achieve the maximum degree of emission reductions possible from vehicular and other mobile sources in order to attain the State ambient air quality standards at the earliest possible date. The ARB is also required to take actions to achieve the maximum-feasible reductions for particulate matter (PM), carbon monoxide (CO), and toxic air contaminants from vehicular sources by December 31, 2000. In response, the ARB adopted the (CaRFG2) regulations that established a comprehensive set of specifications including limits for eight gasoline properties. The CaRFG2 regulations provide significant reductions of (PM), ozone precursor emissions, and toxic air pollutants. The benefits of the program have been equivalent to removing 3.5 million vehicles from California's roads.

California Environmental Protection Agency

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In response to scientific studies related to MTBE, Governor Davis issued Executive Order D-5-99 in December 1999, which directed in part that the use of MTBE be phased out of California gasoline by December 31, 2002 and that by December 31, 1999, the ARB update its reformulated gasoline regulations to provide additional flexibility to refiners to remove or lower oxygen use and to ensure that current emission benefits are maintained. Further, Senate Bill 989—Sher requires that the CaRFG3 regulations maintain or improve upon the air quality benefits achieved from CaRFG2 in California as of January 31, 1999.

In developing the CaRFG3 regulations, the ARB took steps to assure that the emissions benefits of the existing program would be preserved. Increases in some specifications were balanced by decreases in others to prevent any emissions increases. The CaRFG3 staff report was also independently peer reviewed by scientists from both the University of California and California State University systems. The peer review concluded that, "The document provides both a comprehensive rationale as well as specific information on the proposed changes. It is responsive to the Executive Order and to the applicable Senate Bills."

While the Board did approve increases in both the T50 and T90 basic specifications, the Board also approved a reduction in the specifications for sulfur and benzene and a reduction in Reid vapor pressure (RVP) when the evaporative emissions portion of the CaRFG3 Predictive Model is used. These changes were proposed to increase flexibility for refiners to remove MTBE from California gasoline, while preserving the benefits of the CaRFG2 program. Fuels produced to the CaRFG3 specifications will actually lead to a small additional reduction in hydrocarbon emissions and significant additional reductions in oxides of nitrogen (NOx) and toxics emissions compared to fuels produced to meet the CaRFG2 specifications.

Dr. Graboski asserts that increasing the flat limit for T90 will lead to an increase in emissions of polynuclear aromatic hydrocarbons. This would be true if no other changes were made to preserve the emissions benefits. However, reductions were made to the sulfur and benzene specifications to ensure that no increase in emissions would occur.

Regarding Dr. Graboski's comments on evaporative emissions, again the CaRFG3 regulations were designed to ensure that emissions will not increase. The Board did not change the RVP basic specification, but approved changes to the RVP only if the evaporative emissions element of the CaRFG3 Predictive Model is used. When the evaporative emissions model is used, the cap limit for RVP was increased to

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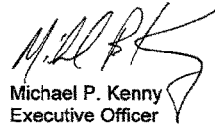
7.2 pounds per square inch (psi), but the baseline RVP was reduced from 7.0 psi to 6.9 psi to ensure that emissions benefits are preserved. In other words, any increase in evaporative hydrocarbons emission from increasing RVP must be offset by exhaust hydrocarbon emissions as if the baseline were 6.9 psi instead of 7.0 psi.

In conclusion, the CaRFG3 specifications were designed as a package that not only assures the benefits of the existing CaRFG2 program is maintained, but that actually will result in additional emissions reductions.

Again, thank you for the opportunity to provide a response to the arguments Dr. Graboski made in testimony before the Subcommittee on Health and Environment of the House Commerce Committee.

Should you have any further questions, please feel free to call me at (916) 445-4383.

Sincerely,



Michael P. Kenny
Executive Officer